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# Large-Area Screening in the MTO and ETO

JRM

Dr. Paul W. Pritchard  
Office of the Chief, Chemical Corps

**E**ARLY, on 7 July 1943, the port, lake, channel, outer harbor, and bay at Bizerte were crowded with ships concentrated for the impending invasion of Sicily. A few minutes after 0400, 60 enemy aircraft suddenly attacked the area, and for 36 minutes the planes kept coming in, looking, in vain, for the target. Nine minutes before the bombers appeared, smoke generators had been started and the area was covered with a dense fog which enemy flares were unable to penetrate. Within the screened vital area not a bomb struck. Not a single ship was damaged, and the port facilities at Bizerte remained intact for the impending invasion. The failure of the enemy raid on Bizerte was chiefly due to the blanket of oil smoke made by the M1 mechanical smoke generator, a machine which was not even on the drawing boards at the beginning of the War, but one which was designed and quickly produced during 1942, to save lives and equipment in situations like that at Bizerte.

## Background of Large-Area Screening

The development of the bomber after 1920 constituted a threat, in case of war, to the safety of harbors, ships, cities, canal locks, industrial plants, and other im-

portant rear-area installations. If, however, these vital areas could be blanked out from the air with smoke screens and the enemy bombardier could not see his target, the bombing would not be effective. Also, in carrying a war to enemy shores, ports would have to be captured and developed as vital areas in the supply lines. Many of these ports, whether in Europe, Africa, or the Orient, would be vulnerable to enemy air attack. Thus the War Department reasoned as it assigned to the Chemical Warfare Service (now Chemical Corps) the mission of developing a smoke defense against the potential enemy air offensive.

Between the two World Wars, the Technical Division, Chemical Warfare Service (CWS), carried out experiments to determine the best agents, the most suitable mechanical devices, and the most effective techniques for creating large-area smoke screens. Phosphorus and Sulphur Trioxide Chlorosulfonic Acid (FS) generators were tried out along the Panama Canal, but were not effective. Hexachlorethane (HC) smoke was found too irritating and not sufficiently persistent for the primary agent in a large screen. At the beginning of World War II, in 1939, although considerable basic research had been accom-

**Developed to protect rear areas, the mechanical smoke generator was used effectively to save lives and equipment in forward areas as well, by screening MSRs, river crossings, and other tactical operations**

plished and techniques developed, neither the United States nor Great Britain had found a satisfactory agent or a suitable weapon for making large-area screens.

The intensive German bombing of British cities during 1940-1941 demonstrated the effectiveness of air operations against rear-area installations. The British faced the problem of protecting their towns and cities, particularly industrial centers, against air bombardment. Large-area smoke screens became one means of avoiding the most serious effects of enemy bombing, by preventing accurate aiming on vital targets.

In important industrial centers, the British laid out lines of smoke pots (designated generators in the United Kingdom) to place smoke over the vital areas under any wind direction. The generators were of the oil-burning type, similar to the smudge pots used in American orange groves. Civilians living along the smoke line turned out on all alerts under the Civilian Defense Program to operate the pots, as highly trained personnel were neither necessary nor available.

The operation of the stationary pot line, however, required an extensive supply system. The generators had to be placed in many areas where they were never used, as no one knew where the enemy would strike. To overcome the inefficiencies of the smoke-pot defense the British were, in the meantime, developing mechanical generators which could be truck-mounted, moved about, and put into action quickly. Of a number of mobile generators developed by the British, the most suitable became known as the *Haslar*. This machine which was, unfortunately, excessive in weight and size generated a gray-brown smoke by burning and vaporizing crude oil.

In addition to the stationary and mobile oil-smoke generators, the British had developed a large HC smoke generator, known as the No. 24, which, before the invasion of North Africa, was regarded as

the savior of Malta. Smoke screens at Malta produced by the No. 24 generator protected shipping, and kept open the supply line even when the enemy controlled the air.

Shortly after Pearl Harbor, the United States organized smoke-generator units for the protection of the Panama Canal and the aircraft plants on the West Coast. Each company consisted of 4 officers and 196 men. Their equipment included 3,600 M1 stationary oil generators, employed in two or more concentric smoke lines which completely surrounded the vital area and allowed for any wind direction. The area could be completely blanked out from air observation within 20 to 30 minutes after lighting the generators.

In the meantime, the CWS, National Defense Research Committee, several universities, and industrial concerns co-operatively continued their research for more efficient devices for the production of large screens. Doctor Irving Langmuir at the General Electric Laboratory determined the ideal particle size and the best technique for producing that size. During February 1942, the Homestead Valve Company, in co-operation with the Research and Development Department of the CWS, developed the first mechanical generator to be tested at Edgewood Arsenal. Within the next 3 months, the generators of several other concerns were also tested at Edgewood and elsewhere. The tests showed that the most efficient of these was the Langmuir model, engineered by the Standard Oil Development Company. The first units of this model, standardized as the M1 Mechanical Smoke Generator but familiarly known as the "Esso," left the assembly line on 20 September. The oil smoke produced by the "Esso" was unusually persistent, and the efficiency of the weapon was at least five times that of the British *Haslar*.

While there were still some "bugs" in the M1 because of the haste in its development and production, it was by far



the most efficient smoke-producing machine ever made. Its outstanding defect was its weight (3,000 pounds) and size, so the CWS immediately set to work to develop and procure a small, light, compact generator which could be moved about easily, even by hand. The result was the M2 Mechanical Smoke Generator which was manufactured in time for the Normandy invasion.

### Era of Port Screening

While the plans for the invasion of North Africa were being formulated and implemented, the CWS was hastening to procure sufficient mechanical generators to equip and train two smoke companies for the operation. Ten days after United States troops invaded Africa, the 78th Chemical Smoke Generator (SG) Company landed there. On the trip across the Atlantic, their generators had been lashed to the deck, ready to make smoke if enemy aircraft attacked. On landing, the generators were immediately set up and readied for operation at Casablanca.

As Allied forces drove eastward along the Mediterranean, the captured ports became subject, more and more, to enemy air attacks. Algiers, Bone, and Bizerte bore the brunt of the German bombing effort. In all, 13 North African ports were screened by United States and British forces. The most extensive operation was that at Bizerte for the protection of forces concentrated for the Sicilian invasion, and later, for the assault on Salerno.

After a successful record of saving lives and equipment in North African ports, the large-area screen was included in plans for the invasion of Sicily by the Seventh Army. Following the capture of Palermo, the 69th and 78th Chemical SG Companies were employed, according to plan, in screening that port. Upon the few occasions when enemy bombers made an appearance at Palermo, the port and neighboring areas were blanked out and the bombings were ineffective.

Plans for the invasion of Italy by the Fifth Army included smoking the landing beaches at Salerno, and the port of Naples which, after its capture, was to be the most vital point in the supply line to Italy. At Paestum—the American beach area of the Salerno operation—the smoking was to be performed with pots until mechanical generators could be landed. The 24th Chemical Decontaminating Company, which had received smoke training, was selected to operate at Paestum because that unit could, if necessary, be used for antigas functions. The M1 mechanical smoke generator was still in short supply, so the Navy agreed to furnish sufficient Besler No. 317 mechanical generators for use by the 24th Chemical Decontaminating Company. Prior to the landing of this unit, infantry troops were to light smoke pots to screen subsequent incoming assault waves in order to protect both men and craft against enemy observed fire from either air or ground.

The Salerno landing was made as planned on 9 September 1943. From the beginning, considerable smoke was made, both by ground and naval forces. To a limited extent, the enemy system of planned fire, however, reduced the protection which smoke gave the assault waves. The 24th Chemical Decontaminating Company landed with the third wave, and immediately began systematic smoke operations which denied or restricted enemy artillery and air observation of the beaches. Each day, at dusk and at dawn, the 24th made smoke with pots and generators to defend against the customary enemy air attacks during the twilight periods. Smoke was also employed at night during air alerts. As long as the enemy retained positions within artillery range, smoke was used to deny observation of the unloading beaches. If the Allied forces had been compelled to withdraw from Salerno—a condition which was a distinct threat for several

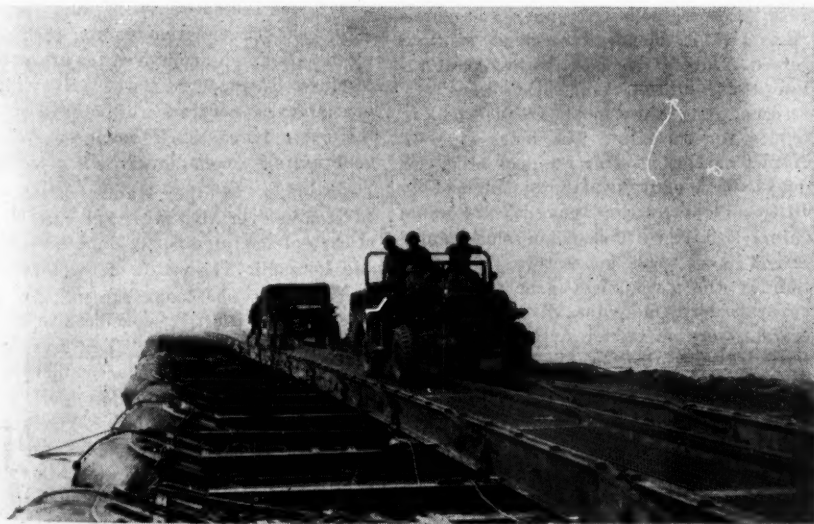


A demonstration supervised by Seventh Army over the harbor at Palermo, Sicily, 16 August 1943, indicates the effectiveness of smoke screening and the speed with which this operation can be employed. Above, the harbor and adjacent areas at 2002, the beginning of the demonstration. Below, the same harbor 8 minutes later.—US Army photos.





These pictures indicate other uses for smoke screens. Above, activities in a Fifth Army ammunition dump in the Anzio area are being concealed. Below, smoke assists a Ninth Army Rhine River crossing. The haze permits sufficient visibility for moving troops and supplies, yet denies enemy observation beyond several hundred yards.—US Army photos.



days—the 24th could have covered the withdrawal with a large-area screen.

Upon the capture of Naples, Allied smoke units were ordered in at once to protect the port from enemy bombing. Naples, as the most important supply and troop port in the theater, was to witness the most extensive Allied large-area screening activity of the war. For that reason, the important features of that operation are worth noting.

The smoke installation at Naples covered not only that harbor and key installations of the city, but also the landing area at Bagnoli and a part of the Gulf of Pozzuoli. As many as 175 ships were anchored under the protection of the screen at one time. A provisional SG Battalion, comprising the 163d, 164th, 168th, 172d, and 179th Chemical SG Companies, the 24th Chemical Decontaminating Company, and the 807th British Pioneer Company, manned the smoke line when operations were at their height, late in 1943.

The layout for the Naples area, as shown in Sketch Map 1, consisted of three separate screens, each with inner and outer rings, which blended into one massive screen. During the most critical time, no less than 20 miles of coast line were screened and the smoke frequently extended for 32 miles. The inner ring of Naples harbor, covering the dock area, the quays, and the breakwater, was manned by British Pioneer troops using No. 24 generators (pots) at 370 smoke-mission points, and 14 Besler smoke generators. The operation of the mechanical generators was supervised by Americans. Six of these generators were on Castel dell' Ovo and immediately northward, to blank out that important landmark. The other eight Beslers were placed directly north of the repair facilities in the center of the harbor.

The outer ring, although continuous, followed a circuitous, and in some cases precipitous, route through the town area.

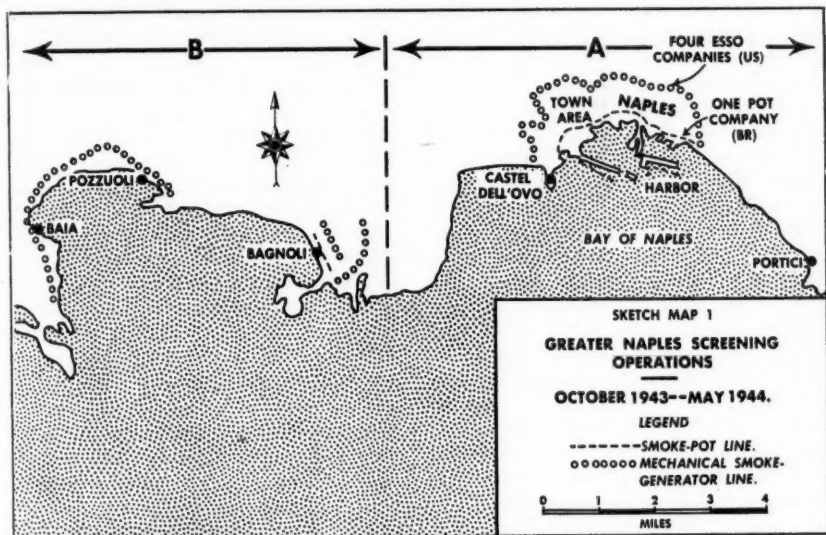
The west end of the line began near the coast, about 600 yards west of Castel dell' Ovo, and extended eastward as a crude semicircle, about 6 miles long and 1 mile north of the water front. There were 86 points of fog-oil emission along the line, with an average operating distance between generators of 250 yards. Generally speaking, within 8 minutes after the command "make smoke" was given at the Naples Gun Operations Room (GOR), an area about 5 miles long and 3 miles deep was covered with a dense blanket from the British pots and American mechanical generators. No attempt was made to produce a smoke screen during the day, as the smoke would have interfered with the firing of the antiaircraft guns, and the consumption of fog oil and smoke pots would have been greatly increased.

The screen at Bagnoli, a part of the Naples screen, was operated from October 1943 until after the Anzio task force was mounted in January 1944. The inner ring, around the water front and over the causeway to the Island of Nisida, had 100 HC M1 smoke-pot emission points, each provided with an oil-drum oven for prevention of glare. Thirty-eight Besler (Navy type) mechanical generators were spread out on the outer ring. At Pozzuoli, 48 "Esso" generators were employed.

Screening in the Naples area was effected by operating inner and outer rings at each of the three ports, Naples, Bagnoli, and Pozzuoli. The result of the three operations was one large screen. For the screen to be effective, considerable co-ordination was necessary since seven different smoke units, with a combined personnel strength of more than 1,000, were engaged in the operations. The senior American company commander was the battalion commander of United States SG units, and other company commanders occupied staff positions in accordance with

their rank. The senior British officer commanding the 807th British Pioneer Company at Naples was designated as the smoke-control officer. At the beginning of operations, the American smoke units were

The matériel available for the screening of Naples consisted of British No. 24 generators (pots), American HC M1 smoke pots, 120 M1 mechanical smoke generators, and 52 Besler mechanical generators. The



attached for administration to the 45th AAA Brigade, which was charged with the defense of the port. The operation of the anti-aircraft defenses of the port, including the control of smoke, was delegated by the 45th AAA Brigade to the 12th AA Brigade (British). Smoke units were commanded for technical operations and tactical disposition by the Chemical Officer, Fifth Army.

The orders, "make smoke" and "cease smoke," were given through the AA Command in accordance with policies set up and approved by the Navy, the Air Force, and the AA Command. All smoke units maintained liaison officers, each assisted by a noncommissioned officer, in the GOR, which sent out an alert over both telephone and radio when hostile aircraft were reported in the vicinity.

expenditures per minute of operation at Naples approximated:

No. 24 generators (pots) .....	20 each
HC M1 smoke pots .....	6 each
SGF-1 fog oil .....	215 gallons
Fuel oil .....	30 gallons

Since the average time of making smoke was 34 minutes on the inner ring, and 46 minutes on the outer ring, the approximate expenditures per raid were:

Smoke pots (British and American) .....	884 each
SGF-1 fog oil .....	9,890 gallons

The raid of 26 November 1943 was typical and demonstrated the protection furnished on numerous occasions by screening operations. The generators consumed 11,000 gallons of fog oil, and the smoke was so effective that the enemy flare layer could not even locate the correct area for dropping his flares. While numerous bombs and flares were dropped, not a bomb came



within a mile of the docks or ships at anchor.

Naples was subjected to frequent enemy raids because of the great amount of shipping handled in the harbor. During one of the numerous raids in the spring of 1944, there were 113 merchant ships and between 60 and 70 naval craft in the port area, all of which escaped damage. Between 12 March and 30 April 1944, there were only eight raids, or about one for every six days, but with an Allied offensive in the making, there were 11 raids in May alone. Despite the many raids against Naples from October 1943 to June 1944, ships and the harbor at Naples were virtually untouched. A large number of ships in the port of Bari, Italy, on the other hand, were greatly damaged in one raid when a large-area screen was not provided. The Bari incident, combined with the chronic shortages of shipping and matériel in the Mediterranean Theater of Operations, impressed upon the theater the need for large-area screening operations in Italian ports.

With the danger of enemy raids reduced after May 1944, the mechanical generator companies, both British and American, left Naples for more northern Italian ports, or were alerted for the invasion of southern France. The smoke line then reverted to a single inner pot ring, which covered only the harbor at Naples and was manned by Italian personnel under the command of the Chemical Officer, Peninsular Base Section.

#### Forward-Area Operations

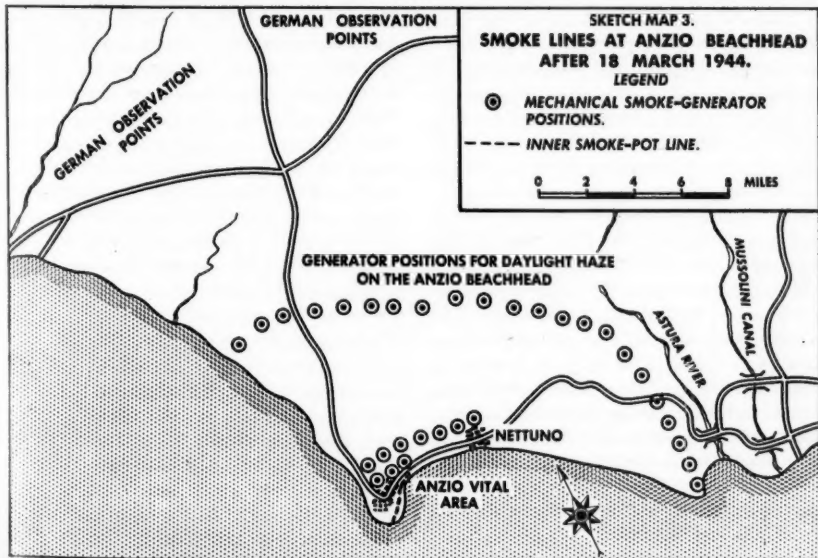
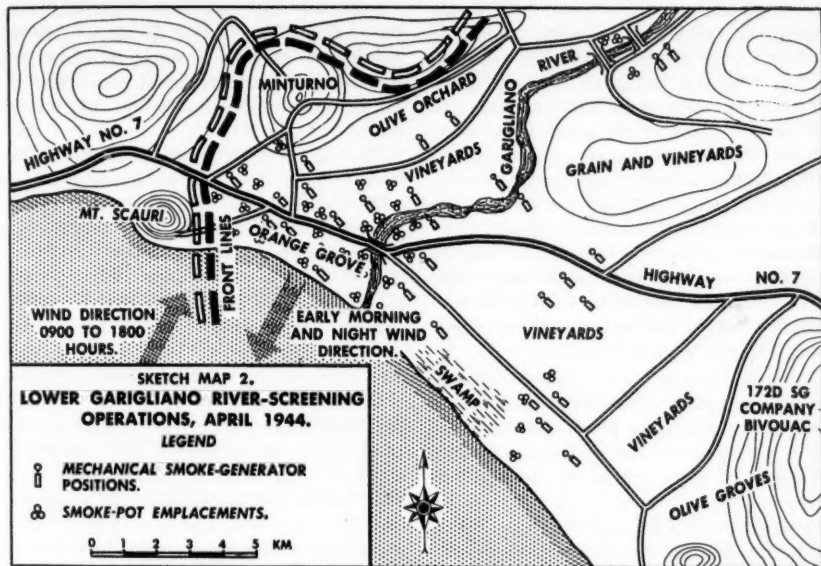
Allied armies slowly but steadily forced the enemy to withdraw northward up the Italian peninsula, but with each withdrawal, the Germans retained the best defensive positions and commanded the best observation of any approaching force. As the Fifth Army slowly drove the enemy from one key position, it seemed there was always another, perhaps a little higher and more commanding. Thus the enemy continually had effective observation of

Allied attacking forces. The roads along which friendly troops and supplies approached the front were few and generally channeled up the valleys, and frequently under enemy observed fire. To meet this situation, the Chemical Officer, Fifth Army, suggested the employment of large-area screens.

The first attempt to demonstrate the effectiveness of the large-area screen in protecting forward-area main supply roads (MSRs) was made on 18 January 1944 along Highway No. 2, near the Rapido River front. Neither smoke units nor mechanical smoke generators were available for the operation, so smoke pots were employed. The demonstration was put on under the supervision of the Chemical Officer, II Corps, and it was determined that, despite some interference with friendly artillery observers, the large-area screen could be employed profitably in forward areas. This type of screen, it was demonstrated, resulted in the saving of lives and equipment by denying observation to the enemy. Troops could advance and supplies could be moved along MSRs without fear of constant enemy shelling. Occasional shells might be fired into the area, but the fire would be unobserved and, therefore, relatively ineffective. The creation of a large-area screen by HC smoke pots, however, involved manpower and supply problems of great magnitude. Besides, the HC smoke was nauseating and toxic if endured in too great a quantity. The employment of the mechanical generator would alleviate or solve these problems. At the time, however, the SG units and equipment were still needed at Naples and Anzio.

Early in March 1944, II Corps was holding a line along the lower Garigliano River, and the 88th Infantry Division was fighting out of Minturno. The enemy, as usual, held the most favorable positions, to the north and east. In bringing supplies to Minturno, United States forces had to





use Highway No. 7, which was under enemy observation. The most vulnerable position along this route was the highway bridge over the Garigliano River. On 9 March, the 88th Division relieved the British 5th Division along the lower Garigliano. Until 28 March, the Chemical Officer, 88th Division, operated a smoke-pot screen along Highway No. 7 with provisional personnel, just as the British had done before being relieved. On 28 March, however, one of the smoke-generator units which had been employed in Naples was made available for screening the MSR along the lower Garigliano.

A pot and generator line was established to give maximum protection to the exposed stretches of Highway No. 7, and another bridge crossing farther up the Garigliano, as shown in Sketch Map 2. Around the lower bridge—the more vital point—were 10 smoke-pot emission points at a radius of approximately 200 yards. At a radius of about 600 yards was a ring of M1 mechanical smoke generators, manned by the 172d Chemical SG Company. Between the front line and the bridge were a number of pot and generator positions, designed primarily to screen transportation between the bridge and Minturno. During the day, the wind usually blew upstream; at night and in early morning, in the opposite direction. Several mechanical generators, mounted on small craft, smoked the shore end of the line near Mount Scauri during the daytime.

At the beginning of II Corps operations on the lower Garigliano, it was planned to produce smoke only during daylight hours, but it was found necessary to provide a screen during periods of moonlight and during night air raids. Occasionally complaints were received that there was too much smoke in the valley. Several of these complaints were lodged, however, when the natural morning mist was heavy and no smoke had been made.

During March, before mechanical generators became available, 700 to 1,000 M1

smoke pots were consumed daily along the lower Garigliano. After 28 March, the expenditures of pots dropped to about 200 per day but the mechanical generators required about 4,000 gallons of fog oil per day.

During the lower Garigliano operations, several generators and personnel from the 172d Chemical SG Company were detailed to screen a MSR in the zone occupied by French forces along the upper Garigliano. The difficulties encountered during these two Garigliano operations were not too serious, considering the benefits of the screens. The supply of fog oil had to be well-planned and adequate, and generator positions had to be selected with the supply problem in mind. The generators had to be dug-in to protect the men and equipment from shell bursts. Smoke pots were still useful for employment in relatively inaccessible places, and as a substitute for a nonfunctioning generator. The problems of the M1 generator, namely its large size, silhouette, and lack of mobility, which had not been serious factors in port-screening operations, could only be solved by the development of a smaller generator.

The conclusion reached in both operations was that the large-area screen, produced by mechanical generators, was effective in covering vital forward areas which were subject to enemy observed artillery fire. The bridges across the Garigliano were not hit, neither were troops nor supplies subjected to observed enemy fire while moving forward.

It has been said that smoke "saved the day" for VI Corps at Anzio. For more than three months, from 22 January 1944 to the breakout in May, the front lines at Anzio were relatively static. As shown in Sketch Map 3, the beachhead extended about 20 miles along the coast and, at its deepest point, was only 9 miles wide. The 24th Chemical Decontaminating Company, a full-fledged smoke unit by this time, landed on D-day and was ready to screen the har-

bor the first night. The entire beachhead was within range of enemy artillery. During the daytime, enemy shelling could and did force the LSTs and Liberty ships to stop unloading and go out to sea. Until mid-March, only an antiaircraft twilight and night screen was employed, but after that date General Mark Clark directed that two screens be operated. The 179th Chemical SG Company was brought in to screen the forward area during daytime. These troops were given the mission of denying observation to enemy artillery. They replaced the smoke generators 2 to 3 miles from the enemy positions and maintained a continuous smoke haze over the area. Regardless of wind direction, enemy artillery observers were unable to see the harbor through which supplies and troops were pouring. At Anzio, the mechanical smoke generator was also employed to conceal the flash of guns.

After the May breakthrough at Anzio, the Germans retreated northward rapidly and, in the pursuit, the 179th Chemical SG Company was taken along for any screening missions which might develop. By this time, Fifth Army commanders were well-acquainted with the variety of missions which the chemical SG unit could perform. Plans were made to screen a key bridge in Rome, but the Germans failed to shell the area. When Leghorn was captured, a smoke line was installed, similar to the one which had existed at Anzio. One smoke company screened the port, while another maintained a haze over the area between Leghorn and the enemy-held hills to the north and east.

Shortly after the Arno Valley was captured, the War in northern Italy became static, with IV Corps holding the left flank to the Tyrrhenian Sea and with II Corps in northern-central Italy, south of Bologna. From mid-October to mid-April, both corps maintained screens almost continuously on MSRs, bridges, and friendly artillery positions in forward areas. The 172d Chemical

SG Company operated a smoke line continuously for 179 days and on moonlight nights, excepting when nature provided its own fog.

To summarize forward-area screening operations in the Mediterranean Theater of Operations briefly: in the mountainous terrain of southern Italy, the Chemical Officer, Fifth Army, discovered, in the employment of the large-area smoke screen, a method of counterbalancing the customary enemy advantage of superior position and observation. From Salerno through the Garigliano Valley, Anzio, Leghorn, and the winter warfare in northern Italy, the employment of large-area smoke screens resulted in the saving of lives, supplies, and equipment and, in many cases, made it possible for Allied forces to pursue operations without too much fear of enemy artillery.

#### Smoke Screening in ETO

The smoke plans for the Normandy invasion were based largely upon Allied experience in Italy and North Africa. The sole mission of the large-area screen up to March 1944 had been to protect ports, and the first plans for Normandy reflected that concept by including in the troop list three SG battalions (four companies each) for screening the beaches and ports of France. Largely upon the insistence of the Chemical Officer, First Army Group, who had been following closely the evolution of large-area screening tactics in Italy, one of the SG battalions was earmarked for use by the armies in forward areas.

Between March 1944 and the invasion of Normandy on 6 June 1944, there was an appreciable decline in enemy air activity which had been the chief cause for the development of large-area screening. As D-day approached, our Intelligence revealed that the enemy still possessed an air force capable of seriously opposing a landing on the coast of France. The unknown factor was whether or not the Germans would use their air power extensively

for that purpose. The Allies had no choice, therefore, but to plan for a defense against enemy bombers and fighters, which included the screening of beaches, the "Mulberries" and, subsequently, the captured ports. The new, small, lightweight M2 generator, fortunately, was available in limited quantities for the operation, and this eased the problem of planning for smoke transportation over the beaches.

As had been the case at Salerno, specially trained decontaminating units were the first smoke troops to land on the Normandy beaches. Had there been a demand for smoke, a screen would have been laid over *Omaha* Beach that morning with smoke pots, or that afternoon with the new M2 mechanical generator. The German Air Force, however, failed to appear in strength. The large number of the enemy aircraft that did appear, came to observe or to lay mines in the waters off the beach. Screening would have hindered important naval mine-sweeping operations; besides, the antiaircraft weapons took heavy toll of the few planes that came to bomb the beaches and, later, the captured ports.

The plans of the Seventh Army in the invasion of southern France also provided for screening the beaches, if necessary, and either the port of Toulon or Marseilles, after its capture. The 3d Infantry Division, as one of the three divisions in the initial assault, landed smoke troops at H-hour on both of its beaches. For 3 hours after the landing, a haze was maintained on the beach for the protection of incoming waves against enemy small-arms and machine-gun fire. In the meantime, naval guns smoked and blasted enemy artillery and machine-gun positions. After the operation, the Division Chemical Officer declared that the 3d Division would never make a landing without screening protection. A review of subsequent 3d Division river-crossing operations reveals that this was no idle statement.

Six American and two French smoke

units were assigned to Marseilles for screening that port, but again the German Air Force failed to appear in strength. The smoke line was maintained until 1 December but, by that time, a number of smoke units had been assigned to forward-area operations or other missions.

The Third and Seventh United States Armies in the ETO employed smoke troops continuously as the enemy was gradually forced to retire. Both of these Armies advanced through hilly or mountainous terrain cut by numerous rivers, where large-area screens were used to save lives and equipment on assault river crossings or MSR's. The Third Army resorted to large-area screening less than a week after its activation on 1 August 1944. The breakthrough had just started and the few remaining bridges across the Mayenne River were vital to the Army supply line. On orders from General Bradley, the Third and First Armies screened and saved the Mayenne bridges from both artillery fire and bombing. The Third Army likewise screened a Seine River bridge in their rapid advance across France.

The Third Army's chief contribution to the tactics of screening lay in its adaptation of the large-area screen to assault river crossings. The Chemical Officer, 5th Infantry Division, pioneered in that type of mission. The first occasion of its employment was in the 5th Division's crossing of the Moselle River at Arnaville, France, in mid-September 1944.

After a period of trial and error, the typical Third Army assault river crossing, when made against serious opposition, assigned an important role to the large-area haze. During the night, the infantry crossed the river on boats, by ford, or by a hastily constructed footbridge and, before daylight, attacked the enemy in the hills back from the far bank. By daylight, smoke pots and, where possible, several M2 mechanical generators, were placed across the river. At the same time,

mechanical generators were placed around the near-shore side of the bridge site. As darkness gave way to dawn, the upwind generators began to lay an artificial fog over the bridge sites. Where little or no wind existed, all generators and some smoke pots were used to start the screen. With each shift of the wind, other generators were started or shut down as needed. The smoke line was laid out so that an effective screen could be erected, regardless of wind condition. The area within the smoke line had to be sufficiently large to permit moving the crossing site up or down the stream several hundred yards, if the enemy discovered the bridging site. The screen also had to be large enough to deny local civilian observation, as well as the more distant artillery observation, and for that reason, a curtain of smoke was generally ineffective. As a result, under normal conditions, the enemy was continuously denied observation of the crossing site.

Engineers frequently began construction before the bridgehead was free of small-arms fire. Smoking operations at the bridge site usually continued until the enemy was driven out of artillery range which, in practice, was anywhere from 1 day to 8 weeks. The screen at Arnaville, which covered both the crossing of the Moselle River and the approach to Metz, began 10 September and continued until 8 November.

### Conclusion

It was found that control of a large-area screening operation in a forward area should be in the hands of the Commanding General of the highest tactical unit involved. Smoke operations in an assault river crossing, for example, involved the activities of artillery, infantry, engineers and, at times, air forces. The best interests of all arms had to be considered, when screening interfered with one particular arm. The Commanding General had to decide whether, at the moment, the protec-

tion of the bridge site or the use of an observation post was the more important. In one operation, before the techniques of control were fully worked out, an engineer officer stopped the smoke because it slowed down construction, only to discover that his action resulted in the destruction of a half-completed bridge, and the exposure to observed artillery and machine-gun fire of both infantry and engineer personnel. The screen was quickly restored and the bridge site moved downstream. Ninth Army plans for the Rhine crossing set up distinctive control procedures which included co-ordination with the British.

The Seventh Army, particularly the 3d and 36th Infantry Divisions, employed large-area screens frequently, in forward-area operations for various types of missions. MSRs were protected, exposed river crossings were made safer, and, during February, the long, exposed Alsatian flank was screened from enemy observation posts across the Rhine. On several occasions, the withdrawals of bogged-down armor and men were covered by smoke generators. Flanks of armor and infantry advances were, likewise, frequently screened by smoke curtains, and motorized SG detachments were attached to rapidly moving task forces.

The Ninth Army crossed the Roer River under the protection of a large-area screen. In the ETO, all armies, both American and British, covered the Rhine with smoke before, during, and after the crossings, to deny observation to enemy artillery and the remnants of the once-powerful German Air Force.

The employment of mechanical smoke generators in forward areas during World War II was of special interest because the mechanical generator was developed to protect rear areas. Beginning at the Garigliano River and at the Anzio beachhead in early 1944, in a little more than a year this weapon became highly valued in the Mediterranean and European Theaters as

a means of saving lives and equipment in forward areas as well.

The mechanical smoke generator in World War II was strictly an American weapon. Neither the enemy nor our Allies produced a comparable device, although British and French forces employed the

generator effectively on frequent occasions. The development of the idea and of the means for screening with oil was a distinct contribution of our American scientists, both within and without the Chemical Warfare Service, toward solving some of the problems of warfare.

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**We in the military seek greater participation by civilians in military affairs. For the complexity of modern war has made the military more dependent than ever before on civilian scientific and industrial genius.**

*General J. Lawton Collins*

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No lesson of World War II has been more dramatic and more completely taken to heart by the people of the United States, the Armed Forces, and the Congress than that of the effectiveness of science in winning military battles. Suddenly, under the unprecedented urgency of a war for survival into which we were thrown, all the past accomplishments of an industrial age were merged into an Age of Science. And, today the general conditions of the world have definitely linked scientific progress to the most sensitive, instinctive, and explosive of human motives—the passion for survival.

*Major General Anthony C. McAuliffe*



# The Personnel Function Within the United States Army

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THE men who live and work within the structure of the Army are, in a general way, aware of the organization of the personnel function incorporated therein, but far too few are aware of either its worth or its specific workings. The term "personnel function" is considered to be an all-embracing one, to include the entire area of staff responsibility assigned to the personnel officer. The categorical statement can be made that a well-rounded, hard-hitting, and up-to-date personnel program is vital to the success of the United States Army. Furthermore, like the automobile, "it's here to stay." However, today, Army officers are guilty of criticizing unduly this function without any real understanding of its value.

An attempt is made in this article to brush aside some of the mysteries that now exist regarding personnel activities. The personnel function (G1) is present and operates in every unit of the Army, and is comparable to the fields of Intelligence (G2), Operations and Training (G3), and Logistics (G4). It now has equal status with these better-known areas of responsibility.

Bearing the above in mind, the person-

nel function can be examined from three different aspects.

1. Its historical background.
2. An examination of that function in the infantry division.
3. A comparison with industry, to demonstrate how the function operates in the Army.

## Historical Review

The personnel function, as such, is a comparatively new phase of army management. It is true that there has always existed within the organizational structure of the Army, certain aspects of the personnel function as it is recognized today. It is equally true that, until after World War I, no one officer or staff section had personnel responsibilities as its main and specific purpose. Personnel administration, while always present, had been delegated to other staff sections. For example, a part of the grievance machinery operated informally through the inspector general and the chaplain. Staff judge advocates and finance officers fulfilled other aspects of this responsibility, but the function as such was not recognized or organized. Indeed, in the light of present recognized precepts of good organization, it is

***The scientific approach to the utilization of manpower is mandatory in the Army and in civilian industry. Both organizations, to be effective, must put the right man in the right place at the right time***

easy to understand the antipathies that marked human relations within the Army at the end of World War I.

In the interim between the two World Wars, the Army gradually became aware of the importance of the scope of personnel activities. And so, in the pre-World War II reorganization of the Army, a staff section was added to the general staff, whose sole duty was the personnel function. It was then that the personnel function was placed on the same plane with the other general staff functions of operations, intelligence, and logistics.

### Personnel Activities in the Infantry Division

The United States infantry division is a self-contained organization which supplies and administers itself by its own personnel. It is composed of approximately 19,000 men in some 14 units, ranging in size from detachments of 14 persons to the division artillery comprising approximately 3,700. A description of the personnel function within the division is a practical way of demonstrating the workings of personnel management in the Army.

Training Manual 12-425A, *Personnel Classification*, states that the military personnel function of the infantry division is the process of planning, organizing, directing, and supervising effectively the morale, safety, health, classification, duty assignment, and career opportunities of all personnel, in order to assist in the successful accomplishment of the mission of the division to which the personnel is assigned. Actually, this definition is a description of personnel management, an integral part of the personnel function. At the division level, however, the definition is applicable.

### Duties and Responsibilities of Division G1

The staff responsibility for personnel activities in the division lies with the as-

sistant chief of staff, G1, who functions as a staff officer and not as a commander. The G1 is responsible to the division commander for planning, co-ordinating, and supervising the implementation of the personnel function within the division, as it applies to individuals within the command, to civilians under supervision or control of the command, and to prisoners of war. His job also embraces policy making and advice to the commander on all matters pertaining to personnel. It must be remembered, however, that at the division level little broad policy is actually developed. The division personnel staff, in general, translates the policy of higher headquarters and implements it by developing the necessary procedures.

Specifically, the activities of the division G1 as listed in Field Manual 101-5, *Staff Officer's Field Manual, Staff Organization and Procedure*, include the preparation of plans and supervision of activities involving:

1. Strengths, records, and reports.
2. Replacements.
3. Discipline, law, and order.
4. Prisoners of war.
5. Burials and graves registration.
6. Morale and personnel services.
7. Civil affairs—military government.
8. Personnel procedures.
9. Interior management.
10. Civilian employees.
11. Miscellaneous functions as assigned by the commander or chief of staff.

The G1 uses specialists found in the administrative services of the division staff (Adjutant General, Provost Marshal, and Chaplain) to aid him in his task. Any problem of a personnel nature which presents itself to the division is placed before the G1 for necessary recommendations as to its solution. He prepares a draft of the recommendations for the approval of the commander, effects the necessary co-ordination of the staff officers concerned, and supervises all activities attendant to

the execution of the approved solution after publication. In the interpretation of orders from higher headquarters, the division G1 co-ordinates with the G1 of higher headquarters. He must, therefore, be thoroughly cognizant of all phases of the personnel function that exist in the field army, the largest unit with whom he works directly. In addition, he must interpret for subordinate units of the division such personnel policies as may affect their activities.

It has become almost mandatory that the personnel officers assigned to our divisions are graduates of the Command and General Staff College at Fort Leavenworth. The need for division "personnel managers" who have received sound, scientific training in this field is self-evident, for personnel policies must be developed, implemented, and supervised by experienced officers.

### Commander's Responsibilities

Any discussion of the personnel function must include the role of the commander. All of the policies and orders conceived by the G1 must have command approval before they can be placed in effect.

What is meant by the term "commander"? Literally, a commander is any man who has been entrusted with the leadership of a group of men. The range of such leadership extends from the squad to the army group. It applies equally to a corporal and to a general. An official expression of Department of the Army personnel policy concerning commanders follows:

"Commanders must recognize the importance of the individual, as such, in the Army. A constant effort should be made to provide the individual with skilled leadership at every level; to capitalize on his aptitudes, interests, and talents; to stimulate his initiative; and to impress the lessons of loyalty and patriotism. Effective personnel relations in an organization can

be satisfactory only when there is complete understanding and respect between individuals. Current information, full and complete explanations, frequent interviews, amicable relations, and full consideration of the individual welfare are necessary aspects to sound management. Commanders of all echelons will:

1. Strive for forceful and competent leadership which permeates the entire organization;

2. Inform the troops of plans of action and reasons therefor, whenever it is possible and practicable so to do;

3. Endeavor to remove on all occasions those causes which make for misunderstanding or dissatisfaction;

4. Assure that all members of the command are acquainted with the procedure for registering complaints together with the action taken thereon;

5. Build a feeling of confidence and sympathy which will insure the free approach of subordinates for advice and assistance, not only in military problems but for personal problems as well.

"Personnel management, to be effective, must operate not only at top level but at all echelons, including that of the most junior enlisted man having subordinates."

It is the commander, then, who has final and irrevocable responsibility for the personnel function in his unit. He is responsible for the success or failure of his command. He cannot escape responsibility by shifting it to his staff or to subordinate commanders. When personnel staff officers formulate and transmit orders to subordinate commanders, they do so as representatives of the commander.

### Relationship to Personnel Staff

The relationship of the commander to his personnel officer is of supreme importance in the proper operation of the personnel function. As has been previously stated, personnel activities, as such, have only recently been recognized as a primary re-

sponsibility. Because of its comparative novelty, its possibilities toward making a command more efficient are sometimes not appreciated. The commander benefits by the appointment of efficient and enthusiastic personnel officers, who enjoy his entire confidence.

Another factor which must not be overlooked is that at the company level no personnel officer, as such, is justified. The commander is, therefore, charged with the responsibility for all personnel activities without the continuing aid of a personnel specialist. In the last analysis, while the staff and various specialists may supervise and implement personnel policy, the commander is solely responsible for that function within his unit.

#### Comparison with Industry

Other factors being equal, the industry with the most efficient organization is the one most likely to succeed. It is axiomatic to state that any activity carried on within these organizations must "pay off" or it is dropped as organizational fat. It may prove of benefit, therefore, to compare the personnel function within industry to that of the Army.

The general likeness of the Army to industry is apparent. The ultimate authority for its being is vested in the people of the United States, who are, in essence, its stockholders. The Army's executive leadership consists of the Chief of Staff and his assistants, who correspond to the president and executives of any corporation. It has staffs, both technical and co-ordinating, as has any well-run business. It is, in fact, a business, and functions like one.

Assuming then, as a generality, the fundamental similarity in organization of the United States Army and industry, it follows, as a corollary, that if the functions are similar, then the principles and policies which contribute to the success of industry may be applicable to the successful organization and operation of the Army. Within

the analogy, also, the organization of the personnel function in the Army should be similar to that in a successful corporation.

Broadly viewed, the personnel function is vital in any organization wherein there exists a relationship between director and directed, between manager and managed.

#### Army Approach

Let us compare the Army approach to the personnel function with that of industry: first, on a general plane, and second, on a man for man, and section for section basis. The official Army policy is stated as follows:

"The Army personnel policy is predicated on the premise that the individual is the most important single asset in any army. It aims to clarify and improve the daily working relationships between each individual, so that the Army may operate as an integrated team in the national military establishment. Army personnel management aims to maintain an organization efficiently administered and effectively managed. The purpose may be implemented by:

- a. Assuring the most efficient utilization of every man's ability;
- b. Providing opportunities for each man to attain the highest proficiency consistent with his capacity;
- c. Providing every reasonable aid to improve his welfare;
- d. Planning wisely for the future, so that any necessary expansion will use all available manpower effectively with a minimum of disruption to the individual's economic life."

#### Typical Civilian Approaches

The above statement is strikingly similar to one made by Mr. Spate, vice-president of General Foods Corporation and a leader in the field of personnel administration, who said:

"Personnel administration is a code of the ways of organizing and treating in-

dividuals at work so that they will each get the greatest possible realization of their intrinsic abilities, thus attaining maximum efficiency for themselves and their groups, and thereby giving the enterprise of which they are a part its determining competitive advantage and its optimum results."

Doctor Michael J. Jucius, professor of Business Organization at Ohio State University, defines personnel management as:

"... the planning, organizing, and controlling of the performance of various activities concerned with procuring, developing, maintaining, and utilizing a labor force such that the objectives and purposes for which the company is established are attained as effectively and economically as possible and of labor itself are served to the highest possible degree."

#### Direct Comparison

From the quotations cited above, then, it seems conclusive that the objectives of the personnel function in industry and in the Army, as comprehensively stated, are very similar. Lieutenant General (then Major General) W. S. Paul, former Director of Personnel and Administration, War Department General Staff, writing in the October 1946 issue of the *MILITARY REVIEW*, makes this direct comparison:

"Business and industry have long recognized that over-all efficiency is a product, not only of scientific management in the strict sense of the term, but of wise human relations as well. The attention of business leadership is being focused as much on men as on methods. Business is finding means to provide, in increasing measure, the things every individual in industry wants, namely, justice in terms of fair play and fair dealing, a sense of individual importance, opportunity, and security. They have long recognized the dollar and cents value of practicing the most basic principle of personnel placement, namely, the utilization of the right man in the right place at the right time.

"If business and industry have found it advisable to stress sound personnel management, it is even more important for the military not only to follow quickly, but actually to take the lead. The Army in World War II was the biggest this nation has ever experienced. Normally we think of the General Motors Corporation as big business. They, however, employ less than 500,000 people. United States Steel with slightly over 300,000 and General Electric with some 170,000 employees are likewise big business.

"The Army, by the same standards, is colossal business. During the period of 1 November 1940 through 1 January 1946, approximately 10,900,000 people served in it. Of this number, over 7,300,000 saw overseas duty. Our peak strength on VE-day was 8,300,000, of which about 900,000 were officers. When one further considers that those 8,300,000 men and women were not employed in a few factory buildings, as in the case of General Motors, but fighting in a War in every corner of the globe, one realizes what big business actually is."

It should be emphasized that the magnitude of the personnel problem of the Army exceeds that of industry, particularly in wartime. The problem becomes one of integrating and moving great numbers of persons, and training them for a job that has no civilian counterpart, that of killing. While industry may double or triple in size, the Army, in wartime, expands twenty-fold. This does not destroy the validity of the comparison, but rather accentuates the importance of the problem of handling personnel properly in the Army.

Despite the difference in magnitude of the problem, it should not be concluded that the organization of the personnel function in the Army is lacking in efficiency when compared to that in industry. The Army has, in fact, pioneered many personnel features that were forced upon industry by organized labor in the 1930s.

### Training Program

The Army has set up an extensive personnel training program for officers in all grades. Much of the training consists of a study of personnel methods in industry. This training is given to foster new ideas in the practice of personnel management in the Army at all levels, for, as Doctor C. D. Leatherman, an authority on personnel education at the Airborne School, Fort Bragg, says:

"The objective of personnel management, in or out of the Army, is to place the right man in the right place at the right time. This requires sound job analysis, efficient classification, and careful assignment. It requires capitalizing on a man's intelligence, interests, and aptitudes through appropriate training and job assignments. It calls for the stimulation of his desire to produce. That desire involves, first, adequate incentives and an opportunity for advancement, and next, the team spirit which gives him pride in his job. Finally, there is the problem of utilizing the man fully on essential tasks and increasing his availability to work by protecting his welfare and controlling his absence from duty."

The United States Military Academy has incorporated a course on personnel management into its curriculum, and Reserve Officer Training Corps (ROTC) students are required to enroll in courses of personnel management. Officers entering the Army from other sources receive approximately 100 hours of instruction related to personnel management. The more advanced Army schools, such as the Command and General Staff College and the Army War College, stress personnel management in their curriculums.

Going beyond its own school system, the Army sends selected officers to civilian universities for graduate work in personnel management. Upon completion of this graduate work, these officers are assigned to industrial concerns, where they work

with those in charge of personnel, learning through practical experience the latest personnel methods used by leading industries in the United States.

### Section by Section Comparison

For a section by section or functional comparison, it is convenient to compare the infantry division to an operating branch of a large corporation, such as a division of the General Motors Corporation. As the personnel duties of the key members of the division personnel organization are described, the parallel will be apparent.

The different sections comprising the typical industrial personnel department are:

1. Employment.
2. Promotion, transfers, discharge, and separation.
3. Training.
4. Remuneration and incentives.
5. Health and sanitation.
6. Safety.
7. Financial aid to employees.
8. Employee service activities.
9. Employer-employee and community co-operation.

As regards the employment section, it may be seen that this portion of the personnel department is directly comparable to the classification section of the infantry division. The duties as laid down in the typical organization for this section are almost exactly those as established for the division classification section. Included are sources of labor, job requirements, selection, assignment, follow-up for initial adjustments, maintenance of records, and the introduction of the employee to company policy.

The promotion, transfers, discharge, and separation section corresponds to that of the division adjutant general. The policy governing these functions in the Army is set by higher headquarters and by the division G1. The adjutant general in his



role of division administrator is charged with the necessary administration of these functions.

The training section of the industrial personnel department differs from that of the division, in that the over-all responsibility for training in the infantry division rests with the G3, or general staff officer in charge of plans, training, and operations. In industry, however, employee training is usually delegated to the personnel department.

As the Army pay scale is established by law, it might be supposed that there is no equivalent of the remuneration and incentive section found in industry. However, that is not true. The new method of promotion by selection provides both the incentive and the remuneration for more efficient performance. On the other hand, job specification activities, usually part of this section in industry, are handled by the classification officer in the division.

The health and sanitation section of the personnel department of a civilian industry section is directly comparable to the division surgeon's section. The objectives of each of these sections are identical.

The safety section in industry is generally found in the personnel organization. The staff responsibility for this function in the infantry division is carried out by the G1.

Financial aid to employees is, in the infantry division, functionalized to a greater extent than in civilian industry. The G1, working with the finance officer, the judge advocate general, and the unit personnel officers, has staff responsibility for this program in the division.

The employee service activities section in industry has its counterpart in the special service section of the division. Included among these activities are recreational arrangements, clubs, company stores, and house organs.

The last staff section of the industrial personnel department is that of employer-

employee and community co-operation. These functions are performed in the infantry division by commanders aided by the inspector general and the public information officer. As there are no unionization activities among Army Personnel, that problem does not enter into its personnel management.

### Conclusions

From the foregoing discussion, it can be seen that every aspect of industrial personnel management is covered by the personnel organization in the infantry division. Some of the sections are identical, some are found in different parts of the division, but all phases of this activity are included. This, then, leads up to the primary difference in the section-to-section comparison. The personnel department found in industry is a closer knit, more centralized unit than that of the infantry division. The personnel director in industry has personal control over all the means required to carry out his task, for each of the sections representing a personnel activity or activities is directly responsible to him. In addition, these sections only have responsibilities as regards personnel problems. On the other hand, in the infantry division, the special staff sections are responsible directly to the commander and not to the G1; and, furthermore, their activities are not necessarily confined solely to personnel work. This staff arrangement is not peculiar to the division G1, but applies to the other general staff officers as well. The division surgeon, for example, has responsibilities regarding the adequacy of medical supplies as well as personnel responsibilities. Despite these and other differences, both organizations function smoothly, if the various key section heads understand their work thoroughly.

It can be said that the objectives of efficient personnel management in the Army are similar to those of industry; that the detailed personnel functions of the

infantry division closely parallel those of industry; and that the organization of the personnel function in the division is basically the same as in industry, with certain differences in staff organization. It must be remembered, however, that the personnel organization differs with every industry in America, whereas the personnel organization of the infantry division is standard throughout the Army.

In the past 20 years, the Army has made tremendous strides in achieving efficient personnel management, and the tempo of improvement is increasing steadily. Higher echelons of command are placing more emphasis on the soldier as an individual. Job specifications, proper classification, and assignment are all carefully considered in order to place the right man in the right position, thereby increasing the efficiency of the Army as well as the satis-

faction of the soldier. Officers and key noncommissioned officers are taught the whys and wherefores of personnel management, in order to strengthen that function throughout the Army. Personnel management seems at last to have come into its own.

General Paul sums up the responsibilities of the personnel officer in this fashion:

"The things needed for success in war are men, money, equipment, and ideas. Without proper utilization of the first—men—not much can be done with the others. The adequate supply, classification, and delivery of men in good physical and mental condition to the point where they can use good ideas (or plans) and material to win battles is a personnel management job and falls primarily on the shoulders of G1."

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We have made every effort to see that soldiers are no longer treated as mere numbers. Our classification procedures and our Career Guidance Plan insure, for each soldier, an equal opportunity to climb as high on the ladder as his own merits will permit him. We have placed increased emphasis on the field of character guidance. Individual commanders, chaplains, and civilian committees are working closely together in preserving the moral standards that, for so long, have been the heritage of American youth. These are not in themselves new principles, for wise and good leaders have always been guided by them. The inexperienced leader will find in them a great help in properly working with his men; and they will stand us in even greater stead should we again be forced to expand our Army.

*General J. Lawton Collins*

# *The Logistical Command* HM

## Its Origin and Place in Modern Warfare

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**A** LOGISTICAL command is a balanced grouping of combined services organized for logistical support of combat forces. An officially recognized unit of the United States Army since 1949, many aspects of its composition and employment are still under study, which delay the formulation of instructional and operational doctrine. This is unfortunate, because one cannot find an experienced officer who will bluntly state that the concept of logistical commands is unsound. Disagreement over details of their organization, assignment, and operations is as widespread as is normal when reducing new ideas to practicalities. That is not serious, but failure to get on with the organization itself is detrimental to the Army's efficient preparation for the next emergency.

Before examining the logistical command, let us review the development of logistics in the "military art and science of war." The Department of Defense, in November 1949, defined logistics as including "... matériel, personnel, facilities, and services." We are more accustomed to leave the second of these items to G1. Hence, the term logistics in this paper will be limited to what we usually think of as "G4 responsibilities."

Logistics seldom entered military commanders' plans before the eighteenth century. Armies transported themselves—usually on foot. Mounted armies such as the Mongols developed were rare. All armies literally lived off the country. And so, prior to the eighteenth century, the inability to find adequate sustenance for invading hordes caused more major retreats than did defenders' valor.

The "people's army" of revolutionary France, first of the conscript or national armies in modern history, initiated the regular supply of powder and shot by military caravans, rather than the hit-or-miss policy of depending upon enterprising contractors. This was the first official recognition of logistics. Napoleon improved upon that budding supply system, by adding clothing and less-than-adequate rations. However, in his preoccupation with the tactical problem of invading Russia, he relegated logistics and the supply of his 500,000 troops to unsupervised officers, more concerned with personal profit than the army's welfare.

Napoleon's defeat in Russia is common knowledge, but few studies describe the importance of logistical failures in that defeat. Lack of forage at the campaign's onset forced the French cavalry to feed

**Logistical commands must be as efficient as combat organizations. To achieve this, a permanent organization of combined services to provide logistical support to combat forces must be formed and trained**

their horses on the unripened grains across the border. As a result, more than half of the animals were incapacitated. Deprived of his cavalry arm, Napoleon was unable to interfere with the Russian withdrawal; unable to force a decisive battle.

Failure to provide the Army with winter clothing and sufficient food made the retreat from Moscow inevitable. It might be concluded that a knowledge of logistical principles and organization could have given the Emperor victory and thus changed the face of Europe nearly 140 years ago. Such speculation, however, is as unprofitable as imagining the effect of machine guns at Bunker Hill. It simply demonstrates that the military art or science has not been overzealous in embracing new concepts of warfare.

Although soldiers have fought as riflemen for centuries, the combat division of combined arms is a relatively new organization. In this country it dates back to 1917. Napoleon organized the earliest divisions worthy of the name, adapted from ideas developed in the French revolutionary armies; but his divisions contained infantry alone.

The development of artillery far antedated that of the earliest infantry fire arms, but it was left to Napoleon to integrate its power with that of the infantry. Providing the infantry division with its own artillery had to wait another hundred years.

The military has been slow to accept the fruits of technological progress. The obvious value of the medical profession went long ignored. An organized medical service in even crude form had to await the intervention of Florence Nightingale in the Crimean War. Military communications lagged far behind their civilian counterparts. In the American Civil War and the Franco-Prussian War, railroads were used—but no military railway services established. Even now, arguments are heard

that a Transportation Service (Corps) is unnecessary.

Since the days of the Marquis de Vauban, a French military engineer of the eighteenth century, staff engineers were used to plan permanent fortifications and, on rare occasions, to advise in siege works. But engineer troops are a modern innovation. In 1861, the United States Army had one company of engineers which it expanded to a battalion. Late in the Civil War, three volunteer regiments (state troops) of engineers were permitted.

It is scarcely strange, therefore, that the concept of forming an organization in which a balanced grouping of all the technical services will participate, prior to its actual use in the field, has been received with a notable lack of enthusiasm. The technical services of the United States Army have, today, only the paper organization of the logistical command to combine them into the logistical equivalent of the combat division of combined arms. And yet, we do not lack experience to prove our need of such an organization.

### US Logistical Problems in World War I

The logistical problems, mistakes, and achievements of the American Expeditionary Force in France (1917-1920) have been graphically recounted by Major General Johnson Hagood, Chief of Staff in the Service of Supply, in his book, *The Service of Supply*. A foreword by General Tasker H. Bliss, former Chief of Staff, United States Army, encouraged Hagood to write about "... very nearly if not quite the most important subject suggested by the war. Most men criticize a lot but they don't make a constructive study to show how things should have been done, or, in a future war, could be done better."

Sure of his facts, General Hagood quotes from his November 1917 report to General Pershing: "Sheer incompetence of the line of communications applies also to indi-

vidual officers, none of whom have had experience in solving such problems. In this I, of course, include myself."

Published in 1927, the General's book not only listed errors, but also suggested remedies. There is no evidence that those suggestions received adequate attention. World War II began with some of the most glaring errors of 1917 being repeated. We had no Transportation Corps; the Quartermaster Corps was so overloaded with responsibilities that its efficiency was curtailed, as had happened 25 years before in World War I. Vehicle maintenance was taken over by the Ordnance Department, and construction by the Engineers. This nation not only sent troops overseas without supporting logistical organizations, but actually launched two invasions, Guadalcanal and North Africa, without providing an organization for logistical support immediately after landing. Then, too, the vital necessities for making war were usually in short supply.

Those who had contact with Communications Zone Headquarters in Europe, or its tremendous counterpart in the Pacific, realize the extent to which those initial errors were corrected. The pendulum then swung from a state of having too little, to too much. The evidence, at least, points in that direction. For example, when the fighting ceased in Europe, there was more American ammunition in storage in the European Theater of Operation than had been fired in the 11-month campaign, from Normandy to the Elbe. Two years after VE-day, some of the technical services overseas still lacked accurate inventories of "war surplus stocks" in their depots.

In the United States, the Army Service Forces organization was set up to provide a unified command over the technical services. It may seem that this should be a supervisory function of G4, General Staff, United States Army, but the service organization was formed to complement the new Army Ground Force headquarters,

permitting the General Staff to devote its time to planning and the supervision of the execution of those plans.

Overseas, the influence of the Army Service Forces disappeared. Individual units, well trained in the United States for their operational mission, came under the jurisdiction of the theater commander, where their continued training was relatively neglected. Unfortunately, there was no higher organization like a division headquarters which was preplanned, tested during training, and which, in the theater, would be responsible for the continued efficiency of service units attached or assigned to it.

Is it surprising, therefore, that our tactical efficiency exceeded the efficiency of our logistical organization?

The credo of Americans is teamwork, organization, and efficiency. Every innovation in weapons has brought its appropriate change in the combat division. Still called "infantry" divisions, they have come to include artillery, armor, engineers, signal units, ordnance, quartermasters, medical organizations, and now even organic "light" aviation. We have formed airborne divisions, armored divisions, and mountain divisions, better to approach tasks that differ from those usually allotted to the infantry division. We have studied, tested, and pondered over every unit, and every item of equipment that make up those divisions. The division staffs are trained, each unit is trained separately, and then the units are assembled and all trained *together*. They are welded into a team, become accustomed to work in unison, are acquainted with each others' capabilities, not merely according to doctrine, but by reason of having tested each others' nature and ability. As a result, few indeed were the American divisions accused of failure and fewer yet where the accusation was justified.

Yet, in contrast to the planning and training of a combat division, we ex-

pected a communications zone with all of its ramifications to be thrown together overseas, and to function smoothly and efficiently. We expected subordinate headquarters of that communications zone called base sections, intermediate sections, advance sections, and port commands to command effectively a hodge-podge of units of the technical services plus other assorted troops. Did this not violate all our principles of efficient organization and teamwork?

Units which did not know each other or their next higher headquarters, units which ranged in size from several thousand-man regiments to three-man refrigeration teams and lens grinding detachments, found themselves part of a logistical organization operating under a section headquarters. If those tossed together sections had functioned harmoniously and at top efficiency, it would have been a miracle. There were no miracles in the communications zone during World War II. But to give credit where credit is due, the sections did accomplish their mission despite incredible difficulties. Naturally, there was waste in the communications zone—waste of manpower, waste of materials, waste of effort—but with typical Yankee ingenuity, the tremendous task of supplying the combat forces was accomplished.

Is it such an impossible conclusion to reach, therefore, that the communications zone needs organization *before* it starts to function; that teams be formed combining units from each technical service as well as within each service; and that these teams, in time of peace, train together? And that, at the same time, headquarters staffs be organized to work with those teams, to learn how to control them? If these conclusions are not illogical, then we have arrived at the original concept of the logistical command.

#### Historical Background

A word as to the logistical command's

brief and somewhat embattled history. Major General R. L. Maxwell, G4, War Department General Staff, fathered the idea in 1944 and called upon the Command and General Staff College to work out the details. First named Logistical Divisions and Corps (Mark I in military terminology), their planned strengths, 45,000 and 75,000 men respectively, were deemed too large, packed as they were with "special situation" units that would be unnecessary in most communications zone assignments.

Logistical Division Mark II was then developed at Fort Leavenworth in 1945, and the Logistical Corps was dropped. Its functions were assigned to a Logistical Division expanded in case of need. The new divisional strength was set at 16,000 organic troops with provision for expansion to either 40,000 or 90,000, according to its assigned mission. The Continental Base Section, service organization for the army of occupation in Germany, was directed to perform a 6-month test in 1946, operating as "The First Provisional Logistical Division," and submit a report to the War Department on its findings.

Eye witness accounts of the birth of the Division indicate that there were many growing pains and few friends of this "infant." European theater service chiefs relinquished to the foundling as few of their powers as possible, and did so grudgingly. Commanders of combat units suspected competition in matters of "area command" where service units occupied posts adjacent to divisional units. Nevertheless, it is conceded that the test was successful.

In 1947, the Command and General Staff College published its *Draft Field Manual, The Logistical Division*, but War Department action toward organizing and training logistical divisions was limited to Organized Reserve units.

In May 1949, this College held an orientation course for commanders and staff officers of logistical divisions. It was at-



tended by some 160 Reserve officers of field and general officer grade, and was enthusiastically received. The course was repeated, and bids fair to become a permanent addition to the College curriculum.

At the initial course, the logistical unit commanders formed an association for the express purpose of furthering the training, and clarifying the mission of their type of organization. By that time, the logistical division had a paper organization. Three sizes were organized designated A, B, and C; the last-named being the largest and commanded by a major general; the middle-sized, B, was commanded by a brigadier general; and the smallest in size, A, by a colonel.

In the summer of 1949, the Command and General Staff College was directed to prepare a study on the reorganization of these units and directed to use the term "Logistical Command" instead of "Logistical Division." The origin of the request for the change in name has been variously ascribed to the inconvenience of calling troop units *Logistical Divisions*, while the *Logistics Division* was then a major agency of the General Staff, United States Army; and to the objection, by combat troops, of applying the term "division" to service elements. Suggestions for renaming what is now called the logistical command are still being made in many quarters.

The current organization of the logistical command is a more important matter. Tentative Tables of Organization and Equipment exist for headquarters, and headquarters company of the A, B, and C classifications. The assigned strengths of the total organization range from 9,000 to 15,000 men for type A, 35,000 to 60,000 men for type B, and from 75,000 to 150,000 men in the C type, depending on the mission to be assigned. No organic troop lists, however, have progressed beyond the recommended stage.

It is the presumption that type A can provide logistical support to a combat

force not exceeding 30,000 men, or approximately a reinforced division. Type B is expected to support a reinforced corps of a strength not to exceed 100,000 men, while the C type can support 400,000 combat troops, approximating a field army in strength. The headquarters organization for the logistical command has been cut to the bone, exactly as it should be. The former headquarters battalion is now only a company, to be augmented by military police, car companies, and other required units or detachments, when needed. The headquarters themselves contain respectively, strengths of 150, 350, and 475 officers and men, assigned approximately on a 40-60 basis.

The highly important question of whether logistical commands will be provided with organic troops from all the services has not yet been announced by the Department of the Army. It is easy to think of many arguments both pro and con. In favor of such assignment, arguments can be advanced indicating the improvement in morale, training, and operations resulting from the discipline, *esprit de corps*, and teamwork gained by units working together. One of the strongest arguments against organic troop lists is the great diversity of missions which may be assigned a logistical command, making it difficult to choose a troop list which will include units of value in all situations.

Troop lists similar to those drawn up by the Command and General Staff College and found in *Draft Field Manual, The Logistical Command, 1950*, are intended to indicate the absolute minimum number of troops of each of the technical services required and yet provide an adequate number for training. Such a list would be unlikely to contain any excess, whatever the operational mission assigned to the logistical command. The strengths proposed were 6,000 persons for type A, 15,000 for type B, and about 33,000 for type C.

This is not only a compromise, but a

practical solution to the problem. With such minimum organic troops, the commander and staff of the logistical command could learn how the units of a technical service operate, based on the activities of only a few of the more common units of that service. Equally important, units of all services would become accustomed to working together on common objectives. When a war or an emergency necessitates that assignment of reinforcements to the basic troop list, the functions of the newly arrived units would not be unknown to the staff of the logistical command. In addition, other units of the command would accept them on the same intimate terms of comradeship, already developed by the few organic units of their identical service.

On their part, the new units would readily adjust themselves to their assignment since units of their own service, like or similar to themselves, would be available to provide the unofficial, but extremely important elements of military information, always so difficult to obtain quickly upon reporting to a strange headquarters.

There are two precedents for this expansion type of command. First, we have the standard combat division to which are customarily attached units of all arms or services, when its assigned mission justifies the reinforcement. Second, there is the experience with the "group" type of organization developed in World War II replacing the regiment in artillery, engineers, and most of the technical services. The "group" has a flexibility impossible to obtain in a regiment, and does not appreciably lack the unit *esprit de corps* of the old rigid organization. The British have long used it in their brigade-battalion organization. The value of this type of unit is its ability to expand or shrink rapidly with no adverse effect upon morale or efficiency. Thus, personnel wastage is avoided; unnecessary units are not left idle or assigned unsuitable

tasks because they are not required to perform their normal functions. On the other hand, no violent reorganization is necessary when such a functioning headquarters needs reinforcements to accomplish its mission, for they can be readily absorbed into the existing organization.

This, then, is a brief history of the development of the logistical command from its first inception in the mind of General Maxwell to its present official status. Today, they are used not only as training units by the Reserve component, but also two Logistical Commands, type C, were authorized in August 1949, as part of the Department of the Army troop basis.

The concept of this new unit is simple to summarize: a permanent organization of combined services to provide logistical support to combat forces.

The capabilities of the logistical command naturally will vary with its size, but so far, there is no clear-cut appreciation of the number of personnel it must contain to support specified forces, for example, a field army. Obviously, its size will have to be geared to the job at hand, and is a problem included in the quandry propounded by a consideration of the "division slice." In other words, how many men do we need behind the "man behind the gun"?

Like the question of its title, the basic size of a logistical command is in itself, of no great moment, if the principles of keeping its organization flexible, easily expandable and contractable, are followed.

A brief discussion of the probable and typical missions for logistical commands is important. If organized, how can the Army use them? The *Draft Field Manual, The Logistical Command*, published in 1950 by the Command and General Staff College, indicates that a logistical command should be able to perform the mission of a communications zone section (advance, intermediate, or base); a major territorial subdivision of a section such as a port command, a general depot

area, or a district; a small territorially undivided communications zone; or serve to administer and help rehabilitate an area in which civil means are inadequate due to natural disaster or military action.

A recent Army logistical command post exercise, LOGEX-50, developed the potentialities of this combined services organization to a greater degree than did the Command and General Staff College committee. Not only was a type C logistical command played in that maneuver as the command organization for all communications zone troops engaged, but recommendations were made, during the play, for this (type C) unit needed the reinforcement of one type B unit to act as an advance section supporting the combat army concerned, and another type B unit to command a major port and depot area, each to operate under the direct command of the type C unit.

In the maneuver reports, extremists among both observers and participants advocated the assignment of a logistical command as an integral part of the type field army, thus relieving the army G4 of his difficulties in trying to "operate," in addition to being a general staff officer.

This theory advocates for the army G4 the same relationship to logistical troops, through the commanding general of a logistical command, that the army G3 has to the combat corps of an army. In fact, one

ardent infantryman went so far as to insist that the commander of such a logistical command be designated the deputy army commander, based on the principle that in squad and platoon tactics the commander leads and assigns his second in command to cover the rear.

### Conclusion

This paper has achieved its goal, if, from the foregoing, the need for a logistical organization, preplanned and trained in peacetime, is evident. The one point that is crystal clear, is that in the logistical command, the fundamental principle that *service troops must be organized into units of combined services for logistical support*, is accepted, just as combat troops are organized into units of combined arms for effective combat operations. Exactly what we name such a unit, the details of its organization, and scope of its missions are secondary to the acceptance of this principle.

This country cannot fight another war efficiently without an adequate logistic organization in the field. The international situation and American world-wide commitments make it obligatory that the Army operate at top efficiency. An important step in the direction of that sought-after efficiency consists of organizing, training, and using logistical commands in the United States Army.

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In total war, the staying power of an army, or a navy, or an air force, and ultimate victory, is in its *reserves* and the time these reserves can be brought to bear and the manner in which their efforts are synchronized.

General Raymond S. McLain

# Causes of the German Defeat in the 1941-1945 Russo-German Campaign

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*The views expressed in this article are the author's and are not necessarily those of the Department of the Army, the Army War College, or the Command and General Staff College.—The Editor.*

**I**T IS difficult to consider separately the Russo-German campaign, in as much as it is a part, perhaps the most important single operation, of the greatest contest on a global scale—the last War. For this reason, one may be inclined to think it is hardly worth while to examine the reasons for the final result of this particular struggle. Nevertheless, the study should be made, for the Russo-German battles, in the period 1941-1943, exceeded all others in importance—including the Nippo-American—and at least affected the course if not the final result of the War. In addition, this study will reveal the many overstatements and stories which have been spread about this campaign by the propagandists of both the parties concerned.

Finally, it must be understood that this examination cannot be made without giving due consideration to the events in other theaters, and to the material assistance provided by the Allies of both parties.

## Reasons for the German Defeat

Various factors contributed to the catastrophic turn of events for the Germans. I will enumerate and examine only the outstanding considerations and will endeavor to establish their relative importance in

my final conclusions. At the same time, I will answer the question: What would have been the outcome if some of the reasons for their defeat had been lacking?

## Potential Manpower Supplies

In spite of the initial German superiority in strength at the Front, and the considerably larger Russian casualties in 1941 and 1942, the potential superiority of Russian manpower—nearly twice as great as that of the Germans—was bound to have a bearing on the trend of events.\*

This superiority in manpower became operative because of increased Russian war production, American and British lend-lease supplies which provided necessary equipment and provisions for the Russian masses, and because the Germans were unable to occupy or destroy the key centers of the Russian war potential. For these reasons Russia was able to overcome the initial set-backs of 1942. She not only re-equipped her forces, but was able to bring into the line better units than she had before, in greater numbers than did the Germans. The German catastrophe at Stalingrad rapidly increased this Russian superiority, still unimportant at that time. In the middle of 1943, Russian superiority

\* Owing to territorial conquests in 1939-1940, the population of Russia increased to at least 190 million, while at the same time, the potential manpower of Germany increased from 75 million to 105 million, by absorbing the populations of Rumania, Hungary, and Finland. Polish, Czechoslovak, Yugoslav, and Bulgarian manpower totaling 63 million persons could not be used by Germany in the Russian theater, for half this population escaped to the area held by Russia, and the other half took a hostile stand.

in manpower over the Germans had reached the ratio of 2 to 1. As the initiative passed into their hands, and because the Germans possessed an inadequate reconnaissance service, the Russians were able to concentrate three or even four times greater strength (especially in artillery) at any chosen location.

This growing disproportion in strength was not compensated for (as in the first years) by German technical and air force superiority. On the contrary, as 60 to 70 percent of the *Luftwaffe* was engaged away from the Russian Front, the Russians were also gradually achieving air superiority. Tandem "tank-aircraft," mainly responsible for the German successes from 1939 to 1942, lost its effectiveness.

Further German defeats in the East, the Allied invasion in the West, the gradual withdrawal of German satellites or even their going over to the opposite camp, increased the Russian superiority even more rapidly.\* At the same time, the front line was lengthening, and the battles in the West were absorbing still larger German forces. Until 1944, there were far too many men in the German rear lines. No wonder that from the middle of 1944, the

had been unwilling to fight, and the Russian high command less determined or able. From the beginning, the Russian soldier, as was always the case, was courageous and firm in spite of his initial inferiority complex and inadequate training. His spirits rose continuously. This was true, not only because he became aware (during 1941 and 1942) that the enemy was not as formidable as was claimed, but also because the Germans played into the hands of the Russian propagandists, enabling the latter to avail themselves of all the propaganda slogans used by the Czarist régime.

During the first period of the campaign, the Soviet authorities realized that the "class consciousness" of the masses would not be enough to inspire its fighting men. For this reason, besides taking the strongest measures against the chicken-hearted, the panic-mongers, and stragglers, they dragged from the attic such devices as rusty patriotic slogans, national figures of the past, orthodox popes, epaulettes, badges, ribbons, medals, promotions, and increased the food rations for the troops. These devices gave good service.

The Germans had prepared no plan for availing themselves of the disruptive move-

***Despite numerical superiority and the self-sacrificing courageous attitude of the Russian soldier, it was Anglo-American assistance that enabled Russia to defeat Germany on the Eastern Front in WW II***

Russians had overwhelming superiority on land and in the air.

**Changes in the Fighting Spirit**

A greater manpower potential would not have saved Russia if the Russian soldier

ments found among the national minorities in the USSR and the former smallholders (kulaks). In addition, they treated ruthlessly their prisoners of war and the civil population of the occupied areas. Because of these stupidities, Moscow succeeded in creating a resolute spirit of resistance and hatred of the Germans among the masses, at the front and in the rear. It made possible the smooth evacuation of industrial facilities leading to a gradual expansion of industry.

\* There were 33 satellite divisions on the Eastern Front in 1941, allegedly 61 in 1942, and a maximum of 30 in 1943. Due to battle losses, the Rumanian and Hungarian divisions were not full strength units. In addition, 10 Italian divisions, plus Spanish and Belgian units were completely withdrawn. Only the number of Finnish divisions was not reduced, but they were used less frequently in action.

After Stalingrad, the Russian soldier completely lost his dangerous inferiority complex, and the German soldier his superior complex and his daring spirit of attack. The subsequent changes in morale of both sides bore a close relationship to further operations.

### Increase in Production

In spite of an increasing numerical superiority and an improvement in morale and spirit, the outcome of the operation would have been quite different for the Russians if they were not able to saturate the front with arms and other war matériels. There was every reason to believe, at first, that Russia would be outdistanced in this matériels race, because of the loss of the Ukraine and the partial stoppage of industry in the Moscow and Leningrad areas. It turned out differently. The evacuation of almost all the industrial plants from the Ukraine helped considerably. Production in the Moscow area had only a short break, and Leningrad industries were able to supply local needs without interruption, even while within range of German artillery fire. Other Russian plants operated in a more normal and undisturbed manner than did the German ones, for they were not harassed and destroyed by the German Air Force, had more raw materials in stock, and received ever increasing assistance in tools, machines, and partly-made goods from the United States and United Kingdom. Finally, it must be remembered that the German productive capacity had to supply more than one front, while that of the Soviets could be concentrated against the Germans.

The increase in the Russian industrial output surprised the Germans, and, in some fields, it exceeded the German output. It will suffice to quote some figures relating to armored corps equipment. In 1941, Russia's production of this equipment amounted to 250 percent of the 1940 fig-

ures; in 1942, it rose to 430 percent; in 1943, it increased to 920 percent; and in 1944, advanced to 1,270 percent of 1940 production. A similar rate of increase characterized the production of air force and artillery equipment. At the same time, the rise in German production did not exceed 500 percent for the same period. One must also bear in mind that the curve of losses on both sides was inversely proportional and that the influx of Anglo-American supplies was constantly increasing.

It should also be emphasized that although Russian equipment was more primitive, it was better adapted to the specific war conditions in the East. In some fields, as in tactical bombers, rocket launchers, and tanks (before the *Panthers* and *Tigers* appeared), the Russians outclassed and outnumbered the Germans.\* After 1943, the Soviets had more heavy artillery than did the Germans.

The lack of German long-range bombers operating against Russia, coupled with the unbelievably destructive power of the Anglo-American air raids on Germany, were greatly responsible for enabling the Soviets to develop its qualitative and quantitative superiority in matériel, an event disastrous for the Germans.

### German High Command Errors

The effects of these factors were magnified by some grave errors, made, above all, by the "infallible and genial strategist amongst strategists"—Hitler. I will mention only the principal ones:

1. The postponement of the attack against Russia in 1941 until the second half of June, due to Hitler's decision to overcome Yugoslavia and Greece first although there was no danger from that direction at the time. The available Italian, Bulgarian, Hungarian, and Rumanian

\* The *Nebelwerfer* appeared after the *Katiusha* and the German tanks *Mark III* and *IV* were inferior, even after modification, to the Russian equivalent.



forces were sufficient to defeat these small states.

2. The diminution of the pressure on Moscow after the capture of Smolensk in 1941, due to the turning of part of Field Marshal von Bock's forces to the south. This maneuver saved Moscow, for not only was German motor transport worn out, but also the last "push" came too late.

3. The preparations for the first winter campaign were begun too late. Colonel General Halder admits in his pamphlet *Hitler as Feldherr* that the High Command of the Land Forces submitted its inadequate lists of requirements as late as August 1941, and Hitler ignored them at that time.

4. The order to continue the offensive against Moscow in November 1941, in spite of Field Marshal von Brauchitsch's protests, instead of withdrawing to suitable winter quarters.

5. Postponing the 1942 offensive until July, due partly to previous operations in the Crimea.

6. In 1942, dispatching considerable but still insufficient forces to the Caucasus, although the Russians held the Voronezh area—instead of liquidating that Russian stronghold at any price. By retaining it, the Russians caused an excessive lengthening of the German front and also threatened to cut off German units from the main forces.

7. The stubborn perseverance in attacking Stalingrad, contrary to the advice of Field Marshal von Paulus and allegedly also of Von Bock and Halder.

8. Assigning to unseasoned satellite divisions (Rumanian, Hungarian, and Italian) the protection of the threatened flanks of the Stalingrad front.

9. Forbidding the Sixth Army under Von Paulus to withdraw from Stalingrad after it had been surrounded and after the rescue forces commanded by Field Marshal

von Manstein, organized too late, had been pushed back.\*

10. The order not to withdraw from the Donetz Basin in 1943, which caused an excessive and dangerous lengthening of the front line and resulted in Von Manstein's army suffering huge casualties.

11. Persistence in defending Latvia including afterwards Kurland in 1944, resulting in the isolation of a strong, crack army under Colonel General Schorner. The prolonged defense of Estonia was more justifiable, as it aimed to stiffen Finland.

12. Leaving considerable forces in the Crimea, in spite of the withdrawal from the Donetz Basin and the breaking of the Dnieper barrier, and a lack of adequate forces to launch a counteroffensive which might liberate them.

13. Completely mistaken assumptions regarding further Russian plans in the summer of 1944, and at the beginning of 1945. In the first case, Hitler did not believe that the main Russian effort might be to the north of the Polesie Marshes. In the second case, he was convinced that the main Russian attack would be directed either at Prague via Budapest and Vienna, or at Breslau, but not across Poland, while there were eight Russian "fronts" to the north of the Carpathians and four to the south of them. These mistaken assumptions resulted in an unsuitable distribution of the German forces, and the construction of unnecessary fortifications in the Sudetes, turned to the south.

14. Leaving considerable forces in surrounded towns (Budapest, Posen, Pila, Graudenz, and Breslau) and simultaneously attempting to maintain a continuous front. It is true that these garrisons hampered Russian movements, but at the same

\* Reichmarshal Göring was responsible for influencing Hitler to give this order, as he assured him it was possible to supply the Sixth Army by air, even for a year. In fact, Göring had, at the beginning, supplied only 40 percent of the requirements of this army, which was later reduced to only 20 percent, and even this not to the end. German casualties on this account were enormous.

time they probably tied up more German than Russian forces. In any case, these garrison forces did not play any active part in the counterattacks launched by the Germans.

Apart from these and other important strategic errors (made especially after Hitler took over direct command), the Germans also made mistakes concerning their organization for the war effort and as regards certain political issues. For example, the decision to change over to the production of defensive weapons was delayed too long; women were not employed to advantage and in sufficient numbers in the signal services and air raid precaution units; and plans to establish an independent Ukraine, and free the "kulaks" were abandoned.

#### Changes in High Command

These mistakes had a decisive bearing on the course of the campaign, expediting the German defeat; the more so as they prompted Hitler to look for scapegoats among the outstanding German commanders, and then replacing them either by "yes-men," or "daredevils" of the type of General von Blucher. The dismissal of Field Marshals von Brauchitsch, von Rundstedt, von Leeb and Hoppner at the end of 1941, and of von Bock at the end of 1942, probably deprived the German Army of its best commanders. Also replacing the prudent Halder (Chief of Staff of the High Command of the Land Forces) by the professional optimist Colonel General Zeisler, and the growing influence of the "jingo-strategist" Colonel General Jodl, played into Russian hands.

The same opinion may be held of the later dismissal of Lieutenant General von Kluge, Von Manstein, and Field Marshal von Kuchler, as well as the failure to use properly Field Marshal List and Colonel General Blaskowitz, who had distinguished themselves in the course of the Polish campaign. Mention should also be

made of the very frequent changes in the posts of army and corps commanders. These changes were made so often that only two of the higher German commanders, Field Marshal Busch and Colonel General Guderian, were not dismissed during the whole period of the campaign. Among the successors to these dismissed officers only Von Manstein, Schorner, Field Marshal Model and Colonel General Friesner distinguished themselves; the others were failures.

Changes in high command in the Russian Army were more or less common, especially after Stalingrad. After discarding the old guard; Marshals Voroshilov, Budenny, Timoshenko, Chief of the Air Force Smushnikov, and Chief of the General Staff Shaposhnikov; the new leaders—Marshals Vasilevsky, Konev, Rokossovsky, Zhukov, Malinowsky, Tolbukhin, Bagramion, Govorov, Voronov, and Novikov—remained at their posts until the end, improving their teamwork more and more. Colonel General Vatutin and General Chernakovsky were removed by death, and were not disgraced by Stalin, by being dismissed.

These facts had their bearing on the development of the campaign, as Shaposhnikov, and afterwards Vasilevsky, knew how to profit from the German mistakes in a skillful and ruthless manner, without incurring too great risks. In addition, due to these mistakes, the mobility of the Russian troops increased thanks to the capture of German equipment (and above all to the huge supplies of American mechanized transport being received).

#### Climate and Size of Russia

As already mentioned, the Germans were not at all prepared for the appalling conditions of the Russian winter, either in equipment or war materials. This was true, despite their knowledge of Napoleon's experience in Russia. The result was that in 1941, the German soldiers had to contend with the Russian winter, exception-

ally severe though late, equipped as if engaging in winter exercises near Dresden or Cologne. German caterpillar-tracked vehicles, being too narrow, stuck in the snow and mud. Airplanes could not take off because their fuel froze, and there were no snow plows to clean airfields. A collection, the so-called *Winterhilfe*, improvised at the last moment, improved the state of individual equipment, but the amount of clothing collected was too little and too late. Because of this, the consequences of the first winter were worse than several lost battles. Simultaneously with the great casualties due to frostbite and disease, the morale of the soldiers was undermined and ever after they were terrified by the Russian winter and Russia's vastness.

The Germans had not given enough consideration to the immense size of Russia, and had not sufficient strength to cover it and still protect their rear. Moreover, they did not have enough rolling stock, motor vehicles, and transport planes to move reserves and supplies quickly, although the area occupied was only 8 percent of Russia. The Russian partisans, whose number was ever increasing, also hampered the Germans in gaining complete control over the occupied area.

#### Assistance from Western Allies

Anglo-American assistance played a very important and perhaps the decisive part in the defeat of the Germans. Compared to it, the assistance Germany received from her satellites—Rumania, Finland, Italy, Hungary, Slovakia, the Baltic States, Spain, and Belgium—was on a very modest scale, being limited to land forces.\* This assistance to Germany stopped in 1944 (except from Hungary), while Anglo-American assistance to Russia kept growing. The assistance from the West, betrayed by Russia in 1939, and threatened again by Russia after the common victory, consisted in:

1. Tying up a gradually increasing proportion of the German forces.

2. Air raids on Germany, conducted on an ever increasing scale.

3. Increasing supplies of equipment, arms, raw materials, and machines, within the framework of the lend-lease program.

4. Providing information regarding enemy and Allied forces, plans and operations.

All these forms of assistance were either minimized by the Soviets or even hushed up, so that it might seem that it was Russia alone who defeated Germany. For this reason, it is worth while to examine the extent of this assistance from the West, and its effects.

*Tying up German Forces outside the Russian Front.*—While in the first years of the campaign there were only 24 to 27 percent of the German divisions outside the Russo-German Front, this proportion increased to an average of 33 percent in 1943, and to 45 percent in 1944. This does not refer to the German armored forces, as the bulk of these (65 to 70 percent) were on the Russian Front until the end. The Russian Front was still further relieved by the West as far as aviation was concerned. In 1943, 50 percent of the German bomber and transport force was operating away from the Russian Front; and the proportion for fighters was 75 percent. In 1944, these figures rose to 60 percent and 80 percent respectively. If all these forces had been used on the Russian Front, the course of the campaign would, of course, have been quite different.

*Air raids on Germany.*—From 1943, a powerful and continuously strengthened Anglo-American air offensive against Germany not only decisively retarded an increase in German production and disorganized German communications, but also enabled the Russians to win air superiority. Most important was the systematic destruction of the synthetic gasoline

\* Bulgarian units were not used on the Russian Front.

plants in Germany and the oil wells in Rumania. The shortage of gasoline caused the almost complete grounding of the German Air Force, and reduced the mobility of the German armored and motorized units.

The Americans also tried to help Russia by conducting air raids from Russian bases. The results of these attempts were poor, for at first, the Russians hindered and afterwards willfully obstructed American efforts. Because of these tactics, the American squadrons posted in the area of Poltava were sent back after June 1944. As the front line was moving quickly to the West and neither new targets nor new bases were assigned to them, the Americans were able to make approximately 18 flights against targets which were out of reach of the Russian Air Force. Despite the fact that American air force assistance was urgently needed, political and propaganda aims were superior to military issues.

*Lend-lease supplies.*—Fearing the possibility of a separate peace between Russia and Germany, the Western Allies put their hearts and souls into the problem of reinforcing Russian resistance with supplies of arms, equipment, tools, food, raw materials, instruments, and medicine. They convoyed this assistance, in spite of heavy losses, to Murmansk, regardless of the fact that the Allied naval forces were heavily strained. Supplies delivered to Russia via Persia required a tremendous effort to build lines of communication. The forwarding of these supplies continued, although the Western Allies realized, in 1945, that they were not "extinguishing a fire" but helping the Russians to "rebuild their house," according to the expression used by the head of the American Military Mission, General J. R. Deane.

The United States used 2,660 merchant ships, carrying 16,500,000 tons of goods, valued at 11 billion dollars to help Russia. Among other things, these deliveries included 427,000 trucks; 13,000 armored

vehicles (including 7,000 tanks and 5,000 artillery tractors); 2,300 workshop trucks; about 14,000 planes; 2,000 railway engines; 11,000 railroad cars; about 500,000 field telephones; 2,670,000 tons of petroleum products; 4,478,000 tons of food (mainly tinned); 6 complete petroleum refineries; 1 huge motor-tire factory; great quantities of small arms, medicine, raw materials, and spare parts; and machines, lathes, and other tools.

Deliveries from Great Britain, particularly of tanks, planes, and equipment, were comparable and included, as of March 1944, 5,031 tanks, 6,800 planes, 4,600 antitank weapons, and 150,000,000 rounds of ammunition.

It would be an overstatement to say that Anglo-American supplies alone saved Russia in 1941-1942. They played, however, an important part in the Moscow and Stalingrad battles. There is no doubt that without Anglo-American assistance:

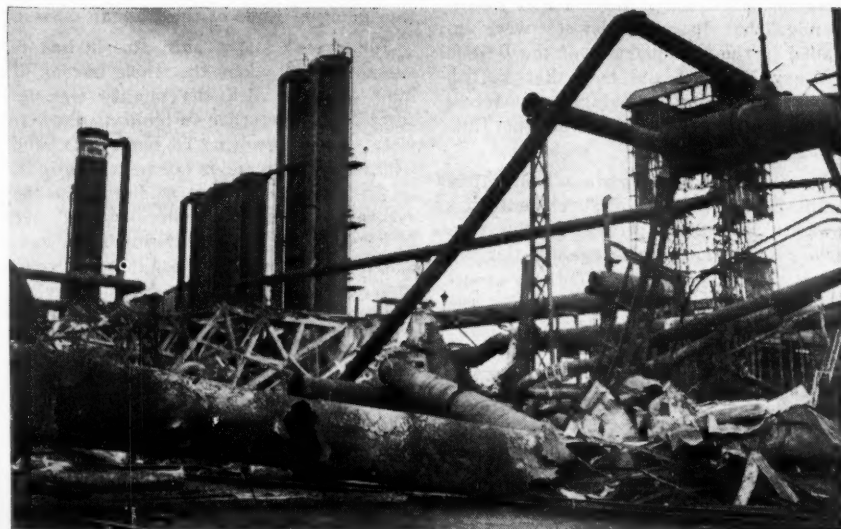
1. Russian war production would have been unable to cope with the requirements at the Front.
2. The Russian Army, without transportation, would have been incapable of quick pursuit.
3. The operations of the Russian Air Force would have been much less efficient.
4. The Russian soldier would have been more poorly fed and equipped, and his ability to resist the strain of war operations would have been decreased.
5. The Russian railway system would not have been able to meet the demands made on it.

6. The death rate among the Russian wounded would have been much higher.

Of course, Russian propaganda belittled, and still belittles, these supplies and the part they played in the conquest of Germany, representing them as a purely commercial transaction and a sign of the weakness of the West. The Soviets will not permit any expression of opinion, which admits that its Western Allies were partners in the defeat of Hitler's forces.



One reason for the German defeat was the destruction of its refineries by the Anglo-American Air Forces. Above, refineries burning at Hamburg, Germany after an attack by the US Eighth Air Force. Below, the remains of the oil, gas, and by-product plant near Marl, Germany, the target of concentrated air attacks.—Department of Defense photos.





*Supplying information.*—Almost immediately after Russia had been attacked by Germany, the British authorities at first, and later the Americans, began to supply Russia with every kind of information about the enemy and to share with her many of their own secrets. This practice continued until the end of the War, although the services rendered by Russia in these matters were insignificant. In fact, according to the above mentioned General Deane, Russia willfully obstructed all attempts at real co-operation, concealing her own strategic plans without mentioning her political ones. This was particularly important, as the Russian intelligence service regarding Germany was on a modest scale.

What Russian co-operation was like may be seen from the fact that the heads of the Anglo-American Military Missions were allowed to go to the Front only twice; that the directions of Russian attacks already in progress and the strength of forces engaged in them were kept secret; that the Anglo-American experts were not admitted to Gdynia and Peenemunde; that listening devices were installed in the headquarters of the British Military Mission; and last, that British aircraft bringing assistance to forces fighting in Warsaw were barred from Russian landing fields.

*Passive attitude of Japan.*—That Japan maintained an attitude of strict neutrality towards Russia (contrary to the provisions of the Italo-Japanese-German pact) was not only one of Hitler's greatest disillusionments, but also one of the main causes of his defeat in the East. Russian divisions withdrawn from the Far East saved Moscow in November 1941. No one can dispute the importance of Moscow in strengthening Russian resistance in retaining a key center of communications and industry. Only 23 Russian infantry divisions, 11 cavalry divisions and 16 armored brigades were sta-

tioned in the Far East in 1943, representing less than 10 percent of the Russian land forces; while at the same time, the Germans were forced to keep about 35 percent of their forces in the West and South.

### Conclusions

To make the picture quite clear, I have confined myself to examining the above stated causes for the quick and complete change which occurred in the Russo-German struggle. It is obvious that this survey is not comprehensive; but I think other factors played a lesser and not quite as decisive a part in the outcome of the campaign, so disastrous for Germany.

It is almost impossible to say which of the facts listed was the most important in transforming initial German successes into defeats. All (except two) had a bearing on the course of the operation, sometimes to a greater and sometimes a lesser extent, depending on the period.

The two overriding factors which were always present included Russian numerical superiority and the hard and self-sacrificing attitude of the Russian masses.

For a year and a half, Russia had to sustain almost alone the whole burden of land warfare with the mighty German forces. She succeeded in blunting the terrible German sword. To her credit, and impartially, we cannot fail to recognize it, is the courage of her soldiers and the stubbornness and ingeniousness of her political leadership and Army high command. She would have collapsed in spite of Western assistance, Japanese passivity, and Hitler's mistakes if she had been defended or commanded by faint-hearted men.

In stating this, we must, at the same time, keep in mind that Russia was defending her own skin and not that of the Allies, and that her courageous fight would have been vain and her numerical superiority valueless if Russia had been



short of arms and equipment, supplied to a great extent by the West.

From these general statements we may draw some definite conclusions:

1. Germany would have overcome Russia in spite of everything, perhaps in 1943:

a. If she had been able to use all her forces on the Eastern front.

b. If she had started her offensives two months earlier in both 1941 and 1942.

c. If she had prepared her forces for a winter campaign.

d. If the West had not given Russia as much assistance as it did.

2. Germany would have been able to resist much longer, far from its homeland, without engaging larger forces in the East:

a. If Hitler had not been prompted in his decisions by vanity and "intuition."

b. If the Anglo-American assistance to Russia had not been on such a large scale.

c. If the air raids on Germany had not been so efficient.

d. If the invasion of Europe by the Anglo-Americans had occurred later.

e. If the Germans had acted in a reasonable manner towards prisoners of war and the populations of the occupied areas.

f. If Japan had threatened Russia with a declaration of war.

3. After breaking the German offensive against Moscow and Leningrad, and maintaining her resistance in the critical year (1942), Russia was no longer threatened by the collapse of either her external or domestic front. She could continue the War even without considerable Anglo-American assistance, in which case, however, she would have been unable to engage in swift offensive action on a large scale.

Summing up, we may say that without Anglo-American assistance, events on the Russo-German Front would have been very different, and the Yalta meeting would have been impossible, if for the one reason: that the Crimea would have been still in German hands in 1945.

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Slowly, but surely, as the months have gone by since VJ-day, we have had driven home to us, the age-old truth that peace, like victory, costs dearly. Our period of relative immunity from world conflicts since the founding of this country is over. Two world wars have demonstrated beyond doubt that the United States must be defeated if any world aggression is to succeed. No future enemy will be foolish enough to attack us until it can see good chances of crippling our industrial potential before the shooting starts, by infiltration, sabotage, and sudden attack.

*Lieutenant General Henry S. Aurand*

# BACK UP FIGHTING

Lieutenant Colonel S. W. Foote, *Artillery*  
Instructor, Command and General Staff College

**T**HE present conflict in Korea forced the United Nations initially on the defensive. By trading space for time, a beachhead was retained until its forces could be built up sufficiently to launch an offensive.

Inasmuch as our own national policy does not permit the maintenance of a large standing army in time of peace, it is very likely that any future conflict will find us, initially, on the defensive, pending the build-up of sufficient forces to permit the adoption of the offensive. As temporary reverses may necessarily force the adoption of one of the three types of retrograde movements—or a combination of them—a working knowledge of how to conduct these operations is essential.

## General

The following definitions will assist in achieving a common understanding as to the meaning of the various terms used in this article.

A *retrograde movement* is any movement of a command to the rear, or away from the enemy. It may be forced by the enemy or may be made voluntarily.

Retrograde movements are classified as withdrawals from action, retirements, and delaying actions.

A *withdrawal from action* is the operation by which a force engaged with the enemy breaks the engagement in order to regain or preserve freedom of action. A withdrawal may be followed by a retirement, a delaying action, or a defense on another position.

A *retirement* is the operation by which a force, seeking to refuse decisive combat with the enemy, marches away from the enemy. It may be made following a withdrawal from action, or when not engaged with the enemy.

A *delaying action* is a retrograde movement by which a force endeavors to delay the advance of a superior enemy. This type of operation employs defensive tactics so frequently that the technique of conducting it is included in the chapter on defense in our military texts.

It is interesting to note that these operations have certain characteristics in common. They are:

1. Each operation contemplates movement to the rear.
2. Each operation seeks to gain time by sacrificing space.
3. Each operation possesses elements of defensive action.

In addition to having these common characteristics, a close relationship exists between all types of retrograde movements. If a force is engaged with the enemy in one position and it desires to move to another position in the rear, it must first withdraw from action or disengage from the enemy. If the force is engaged with the enemy and desires to retire, it still must first withdraw from action, before beginning its retirement. In short, every retrograde movement made from hostile engagement must be initiated by a withdrawal from action. This article will deal specifically with the technique of conducting withdrawals.

### Fundamentals of Retrograde Movements

There are certain fundamentals common to all retrograde movements which should be kept in mind:

First, the decision to effect a retrograde movement for the force as a whole must receive the approval of the higher commander. This does not mean that every unit must always receive permission to execute a retrograde movement. For example, a covering force may execute a series of retrograde movements in performing its mission of delaying the enemy. Before the force withdraws behind the outpost line of resistance (OPLR), it must have the approval of higher headquarters.

Second, retrograde movements require centralized planning, but decentralized execution. Centralized planning is essential to ensure that some units will not be outflanked and cut off because of the premature withdrawal of adjacent units. Centralized execution is also desirable, but seldom practical, because of the loss of control by higher commanders once the movements are under way.

Third, a portion of the force must organize and occupy the rear positions prior to beginning the retrograde movement. This organization should include, as a minimum, selection of unit areas and gun emplacements. These selections should be made early in the planning phase and their

Fifth, retrograde movement will have a detrimental effect on the morale of troops engaged unless specific measures are taken to counteract such effects. Some of the measures include attention to the welfare of the men, the presence of higher commanders well forward, briefings on the plan for the retrograde movement to include the reasons for its adoption, and orders for action subsequent to the operation.

### Withdrawal from Action

A withdrawal from action by a force engaged with the enemy is executed for the purpose of preserving the initiative. It may be followed by other retrograde movements, by a defense, or by an offensive in another location. Although it is often desirable to *disengage* from the enemy, *contact* with the enemy must still be maintained. Contact may consist solely of observation, or it may be maintained by patrols or reconnaissance elements. The reasons for the maintenance of contact are that contact once lost is often costly to regain, and that it is necessary so as to avoid surprise and the resulting loss of security.

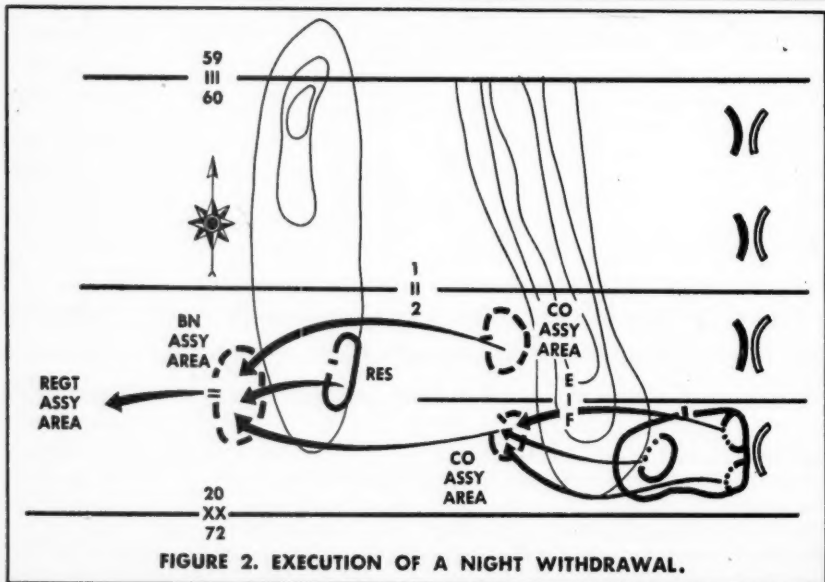
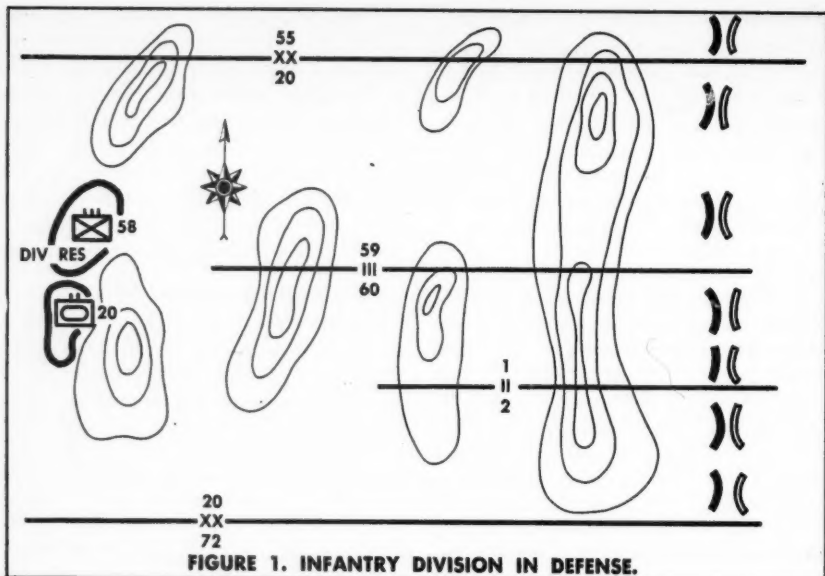
Every effort is made to withdraw from action under cover of darkness, since daylight withdrawals are easier for the enemy to discover and disrupt. Since a successful withdrawal depends on delaying

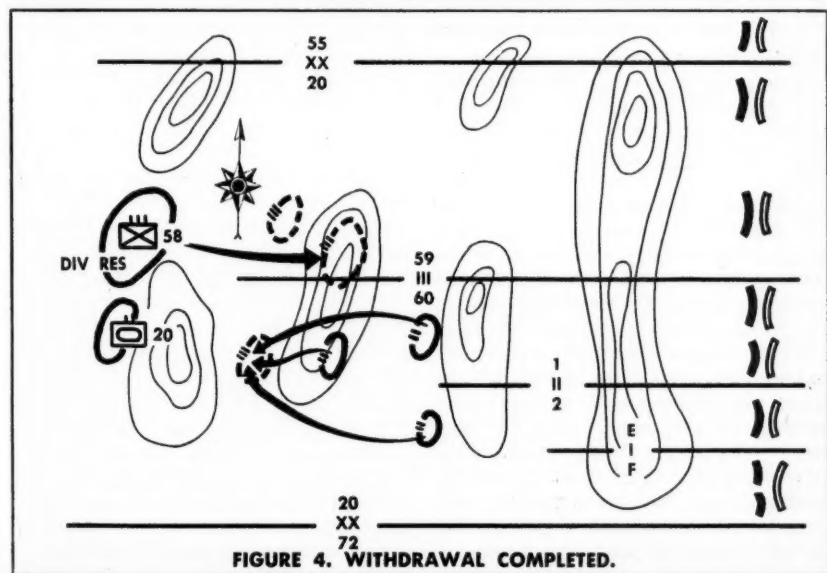
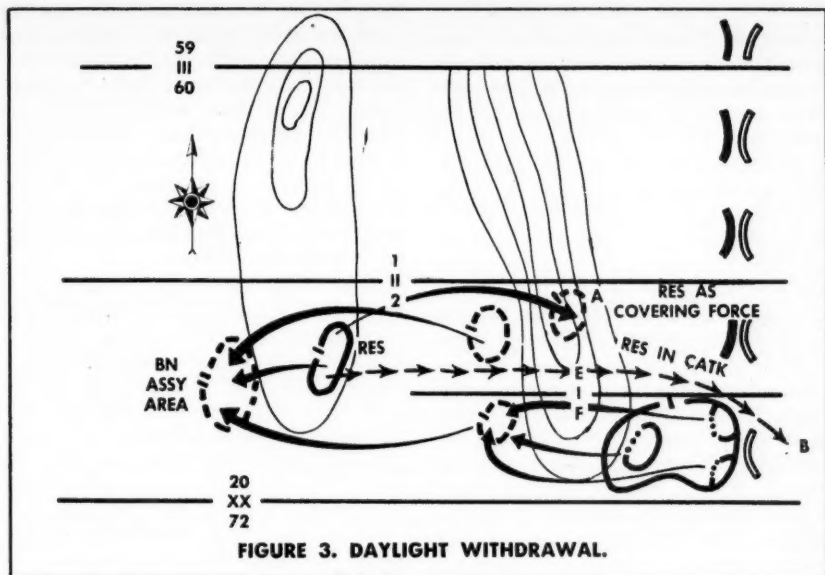
***In future conflicts we may find ourselves initially on the defensive until forces are available for the offensive. Competent professional soldiers must, therefore, have a knowledge of retrograde movements***

location announced to all concerned, prior to the commencement of the retrograde movement.

Fourth, provision should be made for the prompt reorganization of units in the event enemy action interferes with the plan for a retrograde movement.

the enemy from attacking the withdrawing force before it is in its prepared position in the rear, ready to repel attack, every advantage afforded by natural and artificial obstacles, including mines and demolitions, must be exploited to the greatest extent.





### Night Withdrawal from Action

Darkness places limitations on enemy air and ground observation, and this fact is exploited to the utmost in a night withdrawal, to attain secrecy and deceive the enemy as to the type of operation that is taking place. A picture of normal activity, including aggressive patrolling, must be presented to the enemy prior to and during the withdrawal.

A night withdrawal from action can be divided into four phases:

*Action prior to darkness.*—This includes the designation and reconnaissance of rearward delaying positions; issuance of timely orders to facilitate reconnaissance for the location of security detachments, and for movements to the rear; the issuance of any restrictions on reconnaissance required to preserve secrecy; designation of additional security detachments required to protect possible routes of night attack into the present position; designation of the covering force and of covering force positions; and indications of the time when the covering force is to be in position.

*Action from darkness until the forward elements have been withdrawn.*—Beginning at dark, movement to the rear will normally begin. While a withdrawal can be simultaneous, control is facilitated by having rearward elements such as artillery and regimental trains withdraw first, usually along designated routes. Such elements can then be well out of the way by the time other troops have assembled in their areas. Security detachments move to their positions, and all forward elements except small detachments left in contact are withdrawn simultaneously to rearward assembly areas where, if the distance to the next position is great, they may be met by trucks. Control for this movement is exercised by designating zones or routes of withdrawal, together with phase lines and times for movement.

Detachments left in contact to deceive the enemy are supported by attached ar-

tillery. They maintain an appearance of normal activity by aggressive patrolling, by fire from different positions, and through the formal use of radio and pyrotechnics. These detachments maintain contact with the enemy until they are withdrawn. Thereafter, the covering force maintains contact by means of observation and patrols. Where further movement to the rear is involved, the covering force becomes the rear guard.

*Action from completion of withdrawal of forward elements until daylight.*—The convergence of small units in assembly areas of the next higher echelon of command is the most critical stage of the operation. Withdrawing forces are particularly vulnerable while in the assembly area and during movement into and out of the area. Specific security measures, in addition to the protection provided by individual units, must be furnished to ensure that assembly areas are protected, and the avenues thereto are covered. The commander at each echelon is responsible for the security of the assembly area where his unit assembles, and he designates specific detachments for this purpose. All likely avenues of approach, especially those suitable for armor, should be protected by security detachments provided with antitank weapons. These avenues should also be mined and otherwise made impassable. Security detachments protecting routes and assembly areas remain in position to cover the withdrawal of the detachments left in contact and then, in turn, withdraw to assembly areas. Both of these elements should be moved by trucks in view of the limited hours of darkness remaining after their withdrawal.

*Action after daylight.*—By daylight, the entire garrison of the first position, including the detachments which were left in contact originally, must be on the selected position in rear, organizing it, prepared to fight. There are two methods by which the rearward position may be



covered. The commander can employ his reserve in some location between the original and the rear positions. In effect, this constitutes another delaying position. Alternatively, if it is necessary to employ the reserve on another mission, the commander can direct that the forces occupying the rear position outpost their own lines. If the first method is used, the reserve must be in location by daylight, prepared to fight either a delaying action, or a rear guard action in the event a further rearward movement of the rest of the command is indicated.

In a night withdrawal from action there are, in effect, *two* covering forces. The detachments left in contact are a covering force for the withdrawal of the forward elements of the command, while the reserve or unit outposts are a covering force for the rear position. Other than by fire, this second covering force covers the rearward movement of the detachments left in contact only after the detachments have withdrawn to the position of the second covering force. Detachments left in contact withdraw quickly and secretly at a specified time, or on order of the higher commander. If their withdrawal is discovered and the enemy attacks, the detachments must back up fighting.

#### Daylight Withdrawal from Action

The chief difference between a daylight withdrawal from action and a night withdrawal is that the daylight withdrawal requires *combat power* sufficient to permit the withdrawing force to back up fighting, while the night withdrawal depends primarily upon secrecy and deception. The offensive action which the enemy can take at night is usually limited, and small detachments can be left in contact to lead the enemy to believe the entire force is still in position. However, in daylight, such small detachments would be quickly overrun. The force, therefore, must move to the rear without leaving any

small detachments in contact. This rearward movement is aided by a covering force located close up and on the flank of the withdrawing unit to cover the withdrawal of heavily engaged troops by fire or, if necessary, by counterattacking.

In a daylight withdrawal, rearward elements not required for the fighting move first, in order to avoid congestion and to ensure the smooth execution of the movement.

Normally, the least heavily engaged forces are withdrawn next, followed by the more fully engaged units. However, if necessary for the protection of the command as a whole, the heavily engaged forces may be required to hold their positions. It is more advisable to risk losing some heavily engaged units in order to assure the safety of the bulk of the command, than to attempt the extrication of all units at the expense of jeopardizing the entire command.

#### Summary of Covering Force Action

The action of the covering force in a daylight withdrawal is different from that in a night withdrawal. In the night withdrawal, as explained above, there are two covering forces: one being the detachments left in contact which cover the withdrawal of the forward elements; the other being the force which covers the rear position. In a daylight withdrawal, there is normally only one covering force. It must cover the withdrawal of the rest of the command which backs up fighting. It accomplishes this mission by being located close to the front, and on the flank, if the terrain permits, and either covers the withdrawal by fire or engages in counterattacks to extricate heavily engaged units of the command. After the remainder of the command is withdrawn, this covering force may become the covering force for a rear position, or may become the rear guard in case of further movement to the rear.

### Illustrative Examples

The schematic illustrations, pages 44 and 45, show how units execute withdrawals from action.

The 20th Infantry Division (see Figure 1), part of I Corps, has been ordered to prepare plans for either a night or a daylight withdrawal from action, and to be prepared for further operations.

In Figure 2, the sector of the 2d Battalion, 60th Infantry, has been further divided into company sectors showing F Company with two platoons on the line.

Figure 2 illustrates the night withdrawal of F Company and of the 2d Battalion, 60th Infantry. When the withdrawal from action begins, units on the line will leave a few men from each squad, together with engineers and supporting weapons to include machine guns, artillery, and antitank means, in contact with the enemy. The forces left in contact normally will not exceed one-third of the front-line units, or the *equivalent* of one rifle company per front-line battalion. At the hour scheduled for the withdrawal, units that are to move will proceed straight to the rear, taking advantage of available concealment and cover in order to assemble in the areas of progressively higher echelons of command. As indicated in Figure 2, the platoons assembled by companies, and then the companies moved to the battalion assembly area. The commander at each echelon is responsible for the security of the assembly area where his unit assembles. *Security detachments protect the assembly areas and cover routes of approach thereto.* The detachments left in contact with the enemy will be directed to withdraw at a prescribed hour, or upon order.

Figure 3 illustrates the withdrawal from action in daylight. The same situation applies as in Figure 2. The principal difference in effecting a daylight withdrawal as opposed to a night withdrawal is that, in daylight, the withdrawing

force must back up fighting. Since, under these conditions, small detachments would be quickly overrun, no detachments are left in contact with the enemy.

In this case, it is desirable for all front-line units to withdraw simultaneously, straight to the rear. This will seldom be possible, because a daylight withdrawal is not undertaken unless the force faces annihilation by staying in position. It naturally follows that part of the force will be heavily engaged. The least involved force is withdrawn first, as a rule, although the situation may be such that in order to prevent the loss of the heavily engaged force, it may be necessary to counterattack to cover the disengagement of that force.

The necessity for the entire withdrawing force to back up fighting in daylight withdrawals from action requires a different employment of the reserve than in night withdrawals. The reserve may be employed in *either* of two ways, as shown in Figure 3. In "A" it may be employed as a covering force to occupy a position from which the reserve can cover by fire the withdrawal of the force in contact, or, in "B," it may be used as a counterattacking force.

Once the engagement has been broken, and units start to the rear, the operation proceeds in much the same way as for a night withdrawal. Platoons assemble by companies, followed by companies assembling by battalions. As in a night withdrawal, assembly areas are covered by security detachments.

To carry the withdrawal to its conclusion, Figure 4 shows the final assembly of the battalions in their regimental assembly areas. From the point of view of the division commander, the withdrawal from action is completed at the time the regiments have assembled. Now, the division commander can proceed to some other course of action, that is, he can take up a new position, he can assemble in

order to retire, or he can dispose his force for an attack.

### Division Reserve

Before concluding, there is one more matter to consider, and that is the employment of the division reserve. In this example, in the event of daylight withdrawal, the reserve regiment might have been disposed as a covering force to cover the withdrawal of the other two regiments, in which case its location would be such that it could support the units moving back by fire, or it could be employed in a counterattack. In event of a night withdrawal, it could be disposed as a force to cover the occupation of the next position to the rear. The heavy tank battalion can profitably be employed in a counterattack role either alone, or in conjunction with foot troops.

In this article, frequent references have been made to counterattacks. In all retrograde movements, counterattacks will often be necessary. These counterattacks must be preplanned, and, when executed, must achieve maximum surprise. The objectives of the counterattack are limited and will more frequently be within friendly areas than within the enemy positions.

### Summary

While the military policy of the United States is predicated upon an early assumption of the offensive, the defensive is resorted to when necessary to gain time, and, when used in conjunction with

the offensive, to economize on forces. The general over-all purpose of any retrograde movement is to gain or maintain freedom of action.

Certain fundamentals must be considered in formulating plans to carry out a decision which involves retrograde movements. These are:

1. Early selection and announcement of the position(s) in the rear of the present line of contact to be occupied, together with a statement of the subsequent course of action to be followed.

2. Provisions for controlling the retrograde operation to include an adequate communication net; routes or zones of withdrawal; centralized planning to ensure a co-ordinated operation; and decentralized execution to assure the best possible conduct of the action.

3. Provisions for security, to include moving at night, where possible, in order to maintain secrecy and reduce casualties; maintaining continuous contact with the enemy; and maintaining flank protection to guard against encirclement by a fast-moving enemy.

4. Insurance of mobility for the entire force, and especially for the forces being disengaged from the enemy last.

5. Finally, and above all, it must be remembered that, in the face of enemy air and ground superiority, every possible physical means including the use of mines, demolitions, fire, and chemical agents must be utilized to hinder, divert, or delay the advance of the enemy.

# The Technique of Solving Tactical Exercises

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A LARGE portion of a military officer's life in peacetime is spent in study; either in formal schools, or as a supplement to his normal duties. While the principles of war remain constant, the technique of implementing them varies with technological advances, the resources of his country and those of his potential enemy. If the officer is to be prepared to carry out his assigned duties in a capable and efficient manner, he must constantly keep abreast of these changes. The military school system, to a great degree, fills this need. In most of our military schools, the student learns by doing. The instruction usually is presented in the form of tactical exercises. To derive the most benefit from his schooling, the student officer must know the simple mechanics of solving tactical exercises.

## Methods Observed

Experience at military schools has indicated that students approach the solution of problems in one of three ways:

1. The *intuitive method*.—This method is employed by the student who feels rather than thinks through a problem to arrive at a solution.

2. The *memory method*.—Here, the student attempts to relate one situation to another that seems similar for which a solution has already been obtained. The related situation and solution may have been developed in the classroom or may

have been solved by him on the battlefield. In either case, the solution is obtained by remembering previous experiences rather than by analyzing the present situation logically.

3. The *analytical method*.—This method is followed by the student who analyzes the problem clearly and logically, and reduces it to its simple terms. He applies proved techniques for solving tactical problems and arrives at sound solutions.

The first two methods are generally recognized as inadequate. They produce illogical, incomplete, and often erroneous solutions. They are not based upon logical thinking in relation to the specific factors involved. A serious and far reaching result of the first two methods is that the student develops the habit of using unsound procedures. This faulty habit will produce disastrous results if the student ever attains a responsible position in war. Further, by following unsatisfactory procedures, the student does not obtain maximum advantage of the instruction. Instead, he wastes time in unproductive effort and becomes involved in misconceptions which detract from the learning value of the exercises.

## Techniques

A *technique* is defined as being "the method or the details of procedure essential to expertness of execution in any art,

science, etc.; hence, manner of performance with reference to such expertness." Those methods or procedures which are essential for solving tactical exercises analytically are as follows:

- (1) Read the requirement first.
- (2) Read objectively.
- (3) Analyze the problem in terms of the requirement.
- (4) Do not fight the problem.
- (5) Know the basic tactical factors.
- (6) Make a troop-unit check list.
- (7) Apply principles of war and fundamental doctrine.
- (8) Use backward planning.
- (9) Budget your time; answer known questions first.
- (10) Keep the solution simple.
- (11) Make a final check of the solution.

Although this discussion is primarily concerned with techniques of solving tactical exercises, one point must be kept in mind. The mechanical application of techniques is no substitute for knowledge—the knowledge, for example, of basic principles. Procedural techniques will only facilitate the logical application of such principles and fundamentals.

*Read the requirement first.*—Since the final objective of all work done on a problem is its solution, it is apparent that the student should understand initially what he is required to do. He must read *first* that part of the problem which contains the specific requirement(s) to be solved.

*Read objectively.*—The most frequent cause of student errors is a failure to understand thoroughly what is being read. Reasons for this failure to understand are:

- (1) Adopting illogical assumptions due to the placing of faulty emphasis on elements of a problem.
- (2) Missing salient points in the data by reading too quickly, or when overtired.
- (3) Freezing mentally by failing to concentrate, or as a result of personally engendered anxiety tension. This inhibits the formation of a clear picture from the words being read.

Failure to understand what is being read can be avoided. Normally, the problem is clearly and concisely stated. Ample time is provided to read the problem. The student must learn to relax physically and concentrate on reading the data carefully.

*Analyze the problem in terms of the requirement.*—This analysis is necessary to ensure a correct solution to the requirement. Two considerations are involved: first, exactly what does the requirement demand of the student; and second, what are the salient factors in the situation presented. These two considerations are interrelated, since the answer to one promotes an understanding of the other.

A *simple* requirement may involve little or no analysis as to what is desired. For

**When solving tactical exercises in the classroom, military students are assisted by using proved techniques. Knowledge of these techniques will also assist in solving problems on the battlefield**

By reading the requirement(s) first, the student finds the data in the general and special situations more meaningful. In addition, the student will save time, for often, the general and special situations will have to be *reread* in the light of information desired in the requirement(s).

example, if the student is required to decide whether or not to use an artillery preparation for an attack, the decision may involve an analysis of only one factor which has been clearly stated, or assumed, in the situation. A *complex* requirement, though simply stated, may re-

quire considerable analysis to ensure arriving at the correct solution. For example, the student may be required to prepare the plan of attack for a division. This requirement implies the preliminary solution of many contributing aspects of the over-all plan. The computation of time and space factors for troop movements may be one of such implied aspects of that requirement.

To determine the salient factors in any situation necessitates an analysis of conditions depicted in light of what has to be done. This technique presumes a student knowledge of the basic, influencing factors for any tactical situation which are discussed in a subsequent technique. The analysis will generally reveal that one or more controlling factors are the basis for solving the requirement. For example, the requirement may concern an attack by a unit at a specific time. The controlling factor may be the time and space considerations in moving the unit to its line of departure. This might be further influenced by the available transportation, or the road net. The student must recognize the influencing factors and their relative importance in the solution to be developed.

*Do not fight the problem.*—Having analyzed the problem, the student may disagree with conditions portrayed. Instead of concentrating on solving the problem as presented, the student may waste time in trying to devise a better situation. This attempt is wholly irrelevant to the solution of the problem. Personal exceptions to the situation presented must not distract the student from solving a problem. In combat, a soldier accepts the situation as he finds it. In a military school, the student must do likewise. The student participates to solve the problem—not to fight it.

*Know the basic tactical factors.*—The student must realize that the basic factors in a tactical situation, other than the

mission of the unit concerned, are weather, terrain, enemy situation and his own situation. He must habitually ensure that he understands the status of these factors in solving any tactical exercise. Within these basic factors are variables which influence specific situations. These might be relative opposing strengths, reinforcements, morale, time and space, or logistic considerations. If no particular mention is made of any one of these variables in the problem, the student can be certain that they will not influence the solving of the problem.

*Make a troop-unit check list.*—A common error in solving tactical problems occurs when students omit certain units in plans and orders. Reliance on memory is a direct cause of these errors. The information required to construct a troop-unit check list usually will be found in the general and special situations. It takes but a few minutes to construct such a check list, which, when prepared at the start of a tactical problem, is of great assistance to the student throughout the exercise. Its use is furthered by listing units in the same sequence in which they are included in orders. It must be realized that omissions are as costly as erroneous solutions.

*Apply principles of war and fundamental doctrine.*—While practical experience is of tremendous assistance in visualizing a problem, it is, at best, limited in scope. Personal experience alone must not be used, in its restricted and perhaps biased application, to solve problems. It, in itself, does not usually encompass a broad enough field. The student must realize that Army doctrine is based on combined experiences obtained from all theaters of war. It has been revised and evaluated in the light of new developments. The student, therefore, must be wary about substituting his experience for logical conclusions founded on a knowledge of basic principles. He must deter-



mine how the principles apply in each specific situation. He should compare each solution with the fundamentals involved. The sum total of many such comparisons constitute military education and experience.

The nine principles of war offer an excellent check list for the student, in that knowledge in applying these principles provides him with a firm basis for solving any particular tactical problem. The consideration to be given any principle or group of principles will vary, depending upon the situation. For example, in an approach to contact with the enemy, *security* may be given the greatest weight, whereas after contact has been made, *mass* and *maneuver* may be paramount. The application of set rules and methods must be avoided.

*Use backward planning.*—This technique focuses student attention on the objective, and facilitates logical planning to attain it. The backward planning procedure is applicable in most tactical exercises. The student must determine the ultimate goal, and then work backward, step by step, to the existing situation. For example, in planning the scheme of maneuver for a division attack, the division objective—its mission—must be determined first. To attempt to prescribe boundaries between regiments, or select intermediate objectives prior to knowing where the attacking forces must go, will force an illogical solution.

*Budget your time; answer known questions first.*—The time to be spent in formulating answers to requirements is of great concern to students. No set rules can be prescribed for this process. As an aid to the student, however, these two generalizations are offered as a guide.

1. Budget your time.—The time spent in answering requirements should be budgeted. Most exercises at military schools are so designed as to permit their solution within the time allotted. The student should use his time systematically.

Periodic check of progress is beneficial.

2. Answer the known questions first.—Some students attempt to solve all requirements in sequence, even though they may lose considerable time on difficult requirements. By answering known questions first, that much, at least, will have been accomplished. The remainder of the time can be utilized to think out answers to the more difficult requirements. One precaution must be observed in following this technique. If the requirements are *interdependent*, the solutions must be obtained in appropriate sequence.

*Keep the solution simple.*—The final test of a tactical plan is the result obtained. Even the most simple plan is usually difficult to execute under battlefield conditions. The student must constantly strive for tactical solutions that facilitate simplicity of execution. Unfortunately, academic evaluation of classroom solutions must be made on the basis of principles adhered to or violated, rather than upon a visualization of results to be obtained. The tactical solution which permits simplicity of execution will fare best in the classroom, as well as on the battlefield. Sound application of principles and doctrine promotes simplicity.

*Make a final check of the solution.*—A final check of each solution is usually profitable for the student. The check will reveal any unanswered questions. It also provides an opportunity to correct careless errors. Based on experience at the Command and General Staff College, it is estimated that in at least 25 percent of the checks, a student will discover a minor error or omission.

In making this final check the student must ask himself the following questions: "Is this paper written so that it cannot possibly be misunderstood?" "Does this paper express accurately what is in my mind?" If both questions can be answered in the affirmative, those who review the paper will have no difficulty in understanding it.

*Do not abandon a logical conclusion for a last minute hunch. A hunch predicated on trying to "G2" the solution will usually be incorrect.*

#### Summary

It is important that the military officer develop clear, logical, thinking and reasoning processes. Habitual use of sound techniques will facilitate such thinking and reasoning. The habits formed in solving tactical exercises in the classroom will instinctively prompt the same reaction on the battlefield. Hence,

the military student will find it beneficial to adopt the techniques presented in this discussion when solving tactical exercises. These methods or procedures are based on the experience of students at the Command and General Staff College. Obviously, there are others. As presented, the techniques will bear modification for use to suit individual preferences. They are offered in the spirit once expressed by Bismarck, "Only fools learn by experience. I prefer to learn by the experience of others."

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Neither an Army nor a nation can long survive when the philosophy upon which it stands has decayed or its values been lost through public apathy. Our first line of defense then, rests with the educators of America, and I think in particular with those who have consecrated their lives to the social sciences.

*Brigadier General C. T. Lanham*

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Professional attainment, based upon prolonged study, and collective study at colleges, rank by rank, and age by age—these are the title deeds of the commanders of future armies, and the secret of future victories.

*Officers' Call*

# KOREA HONOR WITHOUT WAR

Lieutenant John S. Gayle, *Infantry*  
Aide-de-Camp, Commanding General, 4th Infantry Division

**K**OREA, the S-shaped peninsula jutting down like a dagger at the heart of Japan, was the scene of a strange conflict between Russia and the United States during the initial postwar period. The situation in Korea was different, in one respect, from that in all other occupied areas, except Germany, in that Americans were face to face with the Red Army. Korea also differed from other United States occupied countries in another important consideration; the Koreans were neither a defeated enemy nor a satellite of an enemy, but were a liberated people. These two facts could never be forgotten, ignored, nor overlooked. They played an important part in the policies which were established concerning the Army's mission in Korea.

It was hoped, initially, that the problems of Korea could be resolved smoothly by joint Russo-American efforts. The world-wide policy of the United States was based on mutual respect and co-operation with the Russians. Shortly after the occupation began, however, it became evident that the Soviets were not disposed to co-operate fully in an effort to effect a settlement of Korean problems. This failure to co-operate did not alter United States policy. We, as a nation, bent over backward to avoid any incident or trou-

ble and commanders of United States Army forces in contact with the Russians were required to do likewise.

The 7th Infantry Division, part of XXIV Corps, was charged with the mission of controlling the line of demarkation between the Russian and American occupation zones, processing North Korean refugees, and repatriating Japanese and Koreans. These multiple duties progressed smoothly until the change in attitude on the part of the Russians became evident. The mission of guarding the 38th Parallel then became one of prime importance.

The established American policy, however, made this assignment difficult and dangerous. United States units were required to avoid conflicts, and in case of hostile fire, were ordered to withdraw. Return fire was authorized only for protection of American lives. Over a period of months under this policy, a timid and defensive attitude was developed. The platoon and company commanders were not inclined to be aggressive, due to the pressure and the fear of censure from higher headquarters, should their troops cause an incident.

Unit commanders were further handicapped by several other factors. In most cases, there was usually one officer per

**During the Korean occupation, American troops illustrated the value of aggressive action in the defense. Lessons learned included: men must be well trained, informed, and indoctrinated to accomplish their mission**

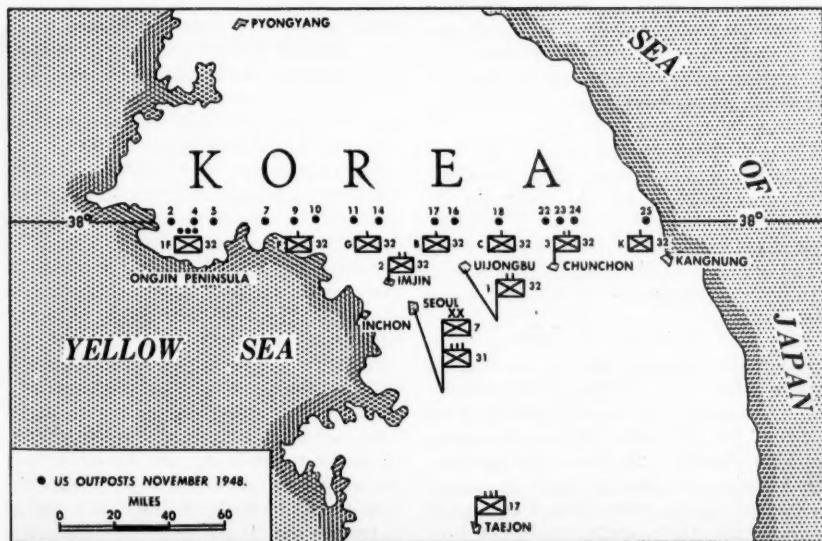


Rugged terrain typifies the 38th Parallel area where the Soviets erected an "Iron Curtain" separating North and South Korea. Above, the mountain west of outpost 17 was the scene of a fire fight with North Korean troops in April 1948. Below, outpost 24 which was a 3-hour jeep ride from the nearest US installation at Chunchon.—USAF photos.





Mountainous terrain restricts roads to the valleys and river lines. Above, US outpost 22, directly under Soviet guns and observation across the Pukhan River.—USAF photo. Below, a sketch map showing the distribution of US outposts and the locations in regard to the 38th Parallel. Consolidation eliminated many of the earlier outposts.



company with only a few experienced non-commissioned officers available in each unit. These persons were constantly "on the alert," because of information provided by the always jittery South Korean police. The cry of "wolf, wolf," was ever-present. As a result, the under strength units were on a guard status a great percentage of the time, which was detrimental to both individual and unit training. In addition, insufficiently trained replacements further added to the complex problem of occupation.

Another imponderable of the situation was the length of time United States Army forces would remain in Korea. No firm United States policy was apparent in planning, or building for the future. This led constantly to the unhealthy speculation that the American forces would be withdrawn shortly. The contemplated withdrawal was detrimental to the establishment of aggressive individual and unit spirit. Further, a feeling among the troops that Korean duty was service in the "Siberia" of the United States Army failed to improve morale that was already bad. All this tended to create an attitude of defeatism and carelessness on the part of many, even though to the aggressive, farseeing soldier, Korea presented a definite challenge.

Despite these problems, the 7th Infantry Division, handicapped by existing policies as well as critical shortages in personnel and logistic support, accomplished its mission of controlling the 38th Parallel and that area of South Korea within its assigned zone of occupation.

### The "Iron Curtain" Falls

The chain of events started on 8 September 1945; the beginning of the occupation of Korea by the United States. The troops of the 7th Infantry Division along the 38th Parallel, the line of demarkation between the Russian and American occupation zones, were then all combat veterans, and their coming to Korea was

viewed by the Koreans as that of liberators. The Russians across the Parallel were viewed in the same light. The events of the weeks immediately following did little to change that opinion. The Americans and the Russians mingled freely, exchanged rations, souvenirs, and candy, and there was generally an atmosphere of friendliness and good fellowship.

Suddenly, an "Iron Curtain" dropped in Korea just as it did throughout the rest of the civilized world. The 38th Parallel became an armed barrier. The Russians maintained a strict vigilance over the Parallel, and they encouraged the North Koreans to harass American troops and South Korean nationals. Even as this change in Soviet attitude became evident, most of the American combat veterans were rotated to the United States and untrained troops were substituted in their place.

From the period January 1946 to July 1948, there was a never-ending series of skirmishes along the entire Parallel. A joint Parallel survey was conducted in 1946 in order to clarify the exact boundary, but the incidents continued to occur. Another US-USSR joint group survey took place in the spring of 1947. Just as this group began the survey, word was received that two Russian soldiers had been killed by South Korean police on the southern side of the Parallel. This incident emphasized the need for physically delineating the boundary between the American and Russian zones. The group surveyed the area from the west to the east coast, erecting 82 wooden markers and fixing the boundary so as to include villages and any man-made works in their entirety to one or the other of the zones. The line thus became a crooked one, part of it jutting north and part south of the true east-west latitude of 38° North. All efforts were made by the American personnel in the survey group to give the Russians the benefit of any doubt, and as it turned out, the survey was more fav-



orable to them than to us. It was anticipated that the accomplishment of this mission would end the border conflicts, inasmuch as all doubts as to the exact line were clarified. However, this proved to be wishful thinking.

High-level politics also influenced the duties of the American troops. A joint US-Soviet Commission on Korea had been meeting off and on for 2 years, attempting to reach an agreement concerning the establishment of a Korean government. This joint commission failed utterly and was disbanded in October 1947. Then the United States presented the Korean question to the United Nations. The UN Security Council agreed to supervise elections in both occupied zones for the election of a single national government. The Russians refused to permit the UN to enter North Korea. Nevertheless, the elections were scheduled for May 1948 in South Korea, and vacancies were left to be filled by the North Koreans whenever they could hold free elections. The announcement that democratic elections would be held in South Korea had a direct bearing on the actions of the Russian-controlled forces north of the Parallel.

An increase in the number of border clashes immediately became evident. Events indicated they would reach a climax during the South Korean election. Through the months of March and April 1948, United States Army personnel and the American Press observed the construction of numerous barricades, trenches, and defensive works on the northern side of the Parallel. The propaganda emanating from Pyongyang, North Korea, and Moscow, proclaimed to North Korea and to the world that South Korea would attack North Korea as soon as the elections were over. This was done to justify the defensive measures being taken. To the military, this was an absurd explanation. It was evident that there was no planning or co-ordination in the construction of these defensive positions,

as enflaming fire could be placed on them from the southern side of the Parallel.

Several days prior to the elections, there were reported movements of large groups of the North Korean Army, trained and equipped by the Soviets, and of Russian units to the vicinity of the 38th Parallel. All of this activity was calculated to induce fear in the minds of the South Koreans, and to create chaos at balloting time. However, contrary to Soviet expectations, the election was a complete success with little Communist-sponsored terror or disturbance on that momentous day. The remainder of May 1948 was observed quietly by the Korean forces north and south of the Parallel. This proved to be only the lull before the storm.

#### Organization of Outposts

During the months of June and July, the North Korean forces were more aggressive than they had ever been. Before describing these actions, a look at the topography of Korea, in the vicinity of the 38th Parallel, is in order. Here, Korea is approximately 200 miles wide. Half of the Ongjin Peninsula, situated on the west coast, lies south of the Parallel. The American forces stationed on the Peninsula could be supplied either by air or by water, depending upon the season. Occasionally, with Russian permission, they could be supplied by motor convoy traveling through North Korea. The terrain along the entire Parallel is quite mountainous, with ranges as high as 4,000 feet. This belt of east-west mountains forms a natural dividing line between North and South Korea.

There are four natural north-south avenues of approach into South Korea. Roads running laterally are few in number and are suitable only for passage on foot or by pack animal. The north and south roads are passable almost all year for a jeep, but the use of larger vehicles is limited by the season and prevailing

weather. Very few of the roads were built to hold up under heavy traffic.

The American forces established outposts on all of the main north-south avenues of approach. In addition, in isolated locations, road blocks were set up consisting of two men, who were relieved at 4-hour intervals. The outposts were semi-permanent installations consisting of from 10 to 30 men, depending upon the strength available in the 7th Division. Behind the outposts, located at connecting points, were company installations. Battalion headquarters were located behind the companies and the regimental headquarters were located in Seoul. The headquarters of the reserve regiment was in Taejon.

The echelonment in depth described above was much the same as would be found in any normal combat situation. Three battalions were on a line approximately 10 miles from the Parallel. Each battalion had two companies on a line anywhere from 1 to 5 miles behind the Parallel, and the companies had their line of outposts in the vicinity of the 38th Parallel. Almost all of these outposts were visible from the North Korean side of the Parallel and nearly all of them were within easy rifle range of North Korean troops. When the outposts were established, therefore, there was no thought of trouble with our wartime Russian allies.

We had a total of five companies on the line; the Russians, combined with the North Koreans, had six. In actual strength, the Soviet-North Korean forces outnumbered the troops of the 7th Infantry Division 4 to 1.

The tense situation on the Parallel reached a climax in July 1948 when grenades were hurled by unknown assailants at an American jeep carrying an officer, a noncommissioned officer, and driver. The noncommissioned officer was wounded and the three soldiers were forced to withdraw, leaving the jeep and attached weapons in the hands of the unidentified North

Koreans. One week later, a small foot patrol, consisting of one combat veteran and five recruits, was ambushed at night a hundred yards south of the Parallel. These men were surrounded, disarmed, and forced to flee back down the trail, with the North Korean soldiers shooting over their heads to keep them running.

On the night of 19 July 1948, at outpost 9, the guard relief had just reported at 0100 and was in the process of relieving the old guard, when three hand grenades exploded in and around the group. The grenades did not inflict any casualties, and under a hail of bullets, the American soldiers jumped for cover. Three men ran into the tin guardhouse, one soldier hit the ground near the guardhouse, and one member of the guard jumped out of the jeep, leaving his rifle behind, and took cover in a ditch on the opposite side of the road. A few shots were fired by the United States soldiers, but after a soldier had been hit twice, the fire of the Americans ceased. North Korean guerrillas rounded up the men, and before leaving the shack, one of the guerrillas pulled a pistol and shot a wounded American soldier in the back as he lay on the floor. The Koreans then disarmed the Americans and chased them down the road, shooting over their heads to force an ignominious retreat. The vehicle with all weapons was then driven across the Parallel. A detailed study of the ground and of the action revealed that a great deal of planning and co-ordination had been made by the attackers and that it was undoubtedly the work of experienced soldiers. It is to be remembered that a great many of the Koreans, North and South alike, had been trained by the Japanese Imperial Forces and Chinese Communist Army, and that many of them had combat experience.

#### New Aggressive Policy Adopted

A further study was then made to de-

termine the necessary steps the 7th Division must take to best accomplish its mission, in view of the increased activity on the Parallel. Results of the study indicated that the Division must return to an aggressive attitude in carrying out its mission on the Parallel. A high degree of confidence and aggressiveness in all personnel was instilled by the division commander, who doubled his personal visits to front-line units. The training schedule was revised to stress scouting and patrolling, with more time allotted to training, though the guard commitments remained the same. Activity on the ranges for both individual and crew-served weapons was increased. The 7th Division returned to a combat status; the fighting spirit of the "Hourglass Division" was rekindled.

It was decided that the location of the outposts, originally determined during the "friendly" period of September 1945, when no trouble was anticipated, was now tactically unsound.

A new plan, however, was devised to discourage the forces north of the Parallel from firing on or attacking United States personnel. The permanent outposts were reinforced to platoon size, and unit commanders were authorized to take any means necessary to protect the lives and property of the American forces. This was in direct contrast to the previous policy of attempting to get along with the Russians and the forces of their satellite, of turning the other cheek when attacked. At the same time, American forces were ordered to do everything possible to avoid any trouble or conflict.

The two-man road blocks were withdrawn and combat platoons moved in to the areas dominating north-south avenues of approach. These platoons dug themselves in, strung wire around the entire emplacement, sighted their automatic weapons, and emplaced their mortars. Weapons crews were well-supplied with flares and ammunition, and booby traps

were placed in front of, and on, the barbed wire. As a result of these actions the spirit and morale of the troops rose, as they again had "pride in self—pride in unit."

The next few weeks proved the value of this change in policy. Dozens of North Korean marauders were wounded and killed by the combat platoons. Whenever any noise or disturbance was heard, flares were fired and, in the ensuing light, the automatic weapons and the individual riflemen fired with deadly accuracy. Within a short period of time, the number of incidents was reduced to almost zero. The combat platoons remained in position throughout the fall and were only withdrawn with the coming of the severe cold weather. Shortly thereafter, the 7th Division was transferred to Japan, and the South Korean Constabulary took over the job of maintaining the Parallel.

Reports made after the withdrawal of the American forces indicated that the number of incidents on the Parallel again reached severe proportions. General Chung Il Kwon, Chief of Staff of the South Korean Army, who recently visited this country, reported that the Parallel was alive with fighting.

### Conclusions

The activities of the 7th Infantry Division in Korea provide vivid, realistic lessons for the United States Army wherever it is stationed. Initially, the troops that became involved in these border incidents were insufficiently trained, were unfamiliar with their arms and their use, and were not fully prepared for the mission assigned them. The necessity for a complete and realistic training program for recruits, therefore, is apparent. Orienting each individual selected for occupation duty is a *must*, for the average American soldier, if told why he must do something and how it fits into the over-all picture, will perform in his usual creditable manner.

Furthermore, it was proved that aggressive action is always mandatory in every situation dealing with the Russians and their satellites. The only thing they understand is force, and controlled force is what the 7th Infantry Division used to stop the series of clashes on the 38th Parallel. Strictly defensive in nature, the action of the 7th Division was carried out in a bold and forceful manner which thoroughly discouraged the enemy. At no time during this action was a violation of the 38th Parallel agreement incurred by American forces. This experience reiterates the principle that the conduct of the defense must always be aggressive, a truth which was initially ignored. Lieutenant General T. J. Jackson gained the nickname of "Stonewall" at the first Ma-

nassas battle by his confident and assured stand; not by an impassive attitude. In Korea, the most important problem confronting American unit commanders was to determine how far they might go in order to clear up enemy activity in their areas. The only sure guide to the solution of this problem was to use aggressive action whenever American lives were endangered.

Higher headquarters had been very definite in not allowing any form of offensive action that might antagonize the Soviets, or give them grounds for complaint. This policy is still in effect throughout the world wherever the Americans and Soviets are in physical contact. Our Korean experience shows that it must be implemented in a bold and forceful manner.

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## NEXT MONTH

### Main Articles

This section includes *In Forty or Eight to Rosecrans* by Lieutenant Colonel Karl F. Eklund, and *The Bandits Last Stand in Greece* by Colonel Theodossios Papathanasiadis, General Staff, Greek National Army.

### Foreign Military Digests

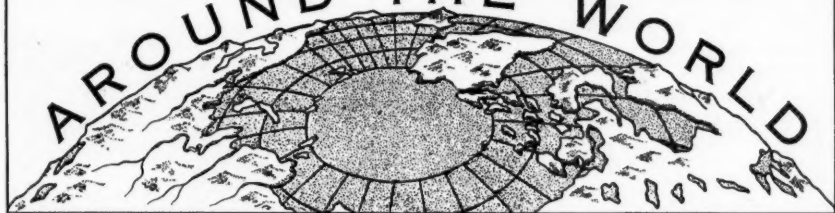
The foreign digests include "Planning the Assault on Sicily" from the *Australian Army Journal*; and "War on the Eastern Front" from the *Canadian Army Journal*.

### Books for the Military Reader

Reviews of *Air Power: Key to Survival* by Major Alexander P. de Seversky and *Smersh* by Nicola Sineversky are included.

# MILITARY NOTES

## AROUND THE WORLD



### UNITED STATES

#### Radiation Detector

A plastic vial 2 inches long and  $\frac{1}{2}$  inch in diameter is the latest device to protect workers in United States atomic energy plants from radiation. The miniature detector, worn on the clothing, enables radiation measurement over two different dosage scales.

The plastic cylinder is filled with air. Inside is a thin plastic rod. An electrical field is established between the walls of the tube and the rod. Radiation causes this charge to "leak" away. By measuring the drop in charge after working hours, technicians can tell how large a dose of radiation the worker received.—*The New York Times*.

#### Overseas Books

Although American publishers have not yet been mobilized on a war footing, they are in a fair state of readiness, and American troops overseas will get plenty of paper-bound reprints. The Department of Defense currently distributes 30 titles a month. To achieve a balanced literary diet, something like a ten-in-one ration for the mind, the American Book Publishers Council will supply a list of available books each month, with the Department of Defense taking its pick of the crop.—*The New York Times*.

#### H-19 Helicopter

One of the Air Force's newest helicopters is the *H-19*, built by the Sikorsky Aircraft Division of United Aircraft Corporation.

Designed as a search, rescue, and liaison



The Air Force's Sikorsky *H-19* helicopter.

aircraft, the *H-19's* cargo compartment will accommodate eight litters and one attendant, or 10 passengers.

The larger cabin was achieved by relocating the engine of the *H-5H* helicopter from behind the pilot to forward of and below the pilot on the *H-19*. The engine is canted at about 45 degrees, with the power shaft passing at the same angle beneath the pilot to a universal joint which is attached to the rotor shaft at the top of the fuselage.—Department of Defense release and photo.

### Jets Redesignated

The Air Force has announced that the YF-96A will be known henceforth as the F-84F; the F-95A becomes the F-86D; the F-97A is now the F-94C; and the YB-56A becomes the B-47C.

Reason for the changes is to lessen confusion when referring to aircraft which are modifications of basic types.—*Aero Digest*.

### Tank Production

If the United States is plunged into full-scale war the country will be divided into five separate tank-building "economies," each as self-sufficient as possible.

Three basic reasons for the geographical division are:

1. Military strategy—to keep the eggs out of one big basket vulnerable to atomic bomb attack.
2. Economic strategy—to disperse the areas according to industrial plants and manpower already available.
3. Social reasons—to avoid migration of skilled labor from one area to another.

Army Ordnance Corps officials, after studying the potential facilities of about 100 plants, have narrowed down the companies which will build tanks and tank-type vehicles to 16.

Each of the five areas has at least two of the plants.—*The New York Times*.

### New Alloy

A wrought alloy, with high strength, ductility, and ability to withstand the high temperatures in rotors of jet and gas turbine engines, is a hardened alloy of iron containing nickel, chromium, molybdenum, and titanium. It will stand up at temperatures up to 1,300 degrees Fahrenheit. A particular advantage is that this high-grade alloy requires a minimum of scarce or strategic alloying elements.—*The New York Times*.

### Field Switchboard

A 22-pound field switchboard, with twice the capacity of heavier equipment which it will replace, has been adopted by the



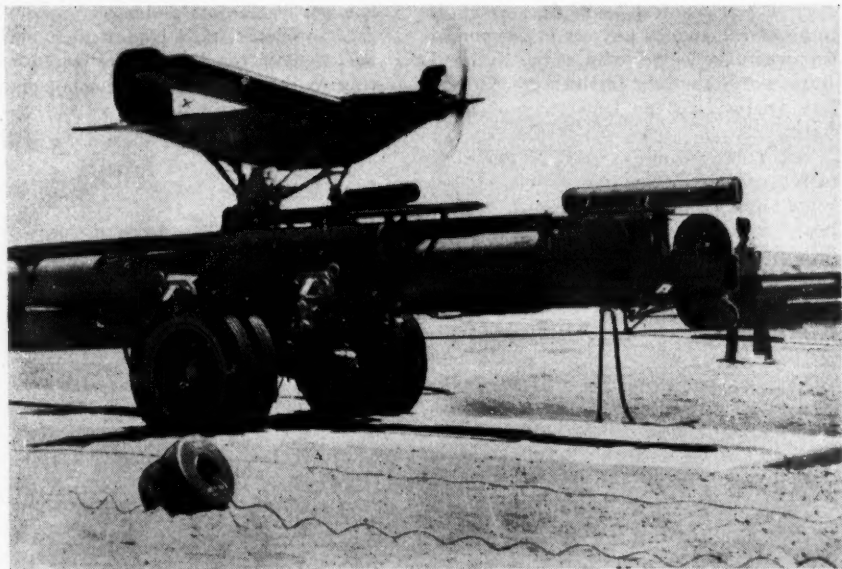
The Army's new 22-pound field switchboard, Army as standard equipment (MILITARY REVIEW, May 1950, p. 67).

The new switchboard, which went into production late last year, has twice the capacity, less than half the weight, and less than one-third the size of the smallest standard field switchboard now used by the Army. It will operate on both wire and radio circuits. In addition, it has retractable cords which stay clear of battlefield mud and water. When not in use, it can be folded into a case and carried like a portable typewriter.

One of the new boards will provide switching service for 12 lines, but it is possible to stack as many as three boards, one above the other, to increase capacity. By slight modification of the boards when stacked, a maximum capacity of 46 lines is possible.—Department of Defense release and photo.



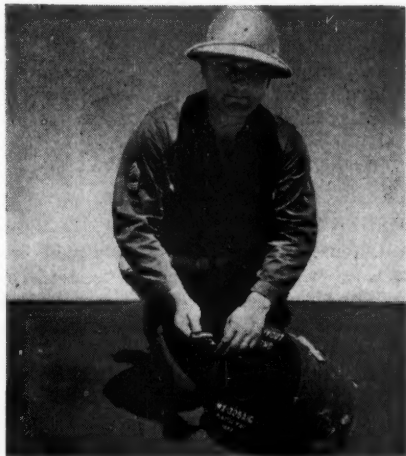
## Wire Laying Plane



Above, the drone, to which wire is attached, takes off from a catapult. Over the target its engine will be killed by radio and the drone will parachute down with remaining wire. Below right, the canvas container holds a half mile of lightweight wire which unreels as the drone zooms toward the target.—*Popular Mechanics Magazine* photo.

Small radio-controlled drone aircraft are being used experimentally by the Army for laying communication wire. The idea being that the radio-controlled drones could do the job faster and more safely than a crew of soldiers in a front-line area.

The wire used by the drones weighs one-third less than World War II field wire and is coiled inside light canvas containers instead of on heavy metal reels. Each container holds half a mile of wire, and the wire in separate containers can be joined to provide sufficient wire for any particular distance required. The containers can be carried on a jeep for laying wire at high speed on the ground.—*Popular Mechanics Magazine*.



### New Robot 'Brain'

A new mechanical brain that promises to be as valuable as any secret weapon in war was unveiled recently at the National Bureau of Standards' Institute for Numerical Analysis on the University of California campus.

The robot genius, SWAC, is an electronic calculator capable of solving 150 simultaneous algebraic equations, involving 4 million arithmetic operations, in 4 hours of computing time.

It is designed to solve mathematical problems involved in the design of new airplanes and ships, as well as equations relating to explosion of atomic bombs and computing trajectories of guided missiles.

The calculator is the fastest of its type in the world. In the time it takes to say the word "multiplication" it can perform 2,604 multiplications or 15,625 additions.—*The New York Times*.

### Army Schools

A total of 25,290 National Guard officers and men have attended Army service and area schools since 1947. This number includes 16,249 enlisted men. Unit schools provided training for an additional 21,964 during the same period. At present, more than 36,000 officers and men are participating in the extension course program. In contrast, only 6,013 Guardsmen attended schools during the entire 20-year period between World War I and World War II.—News release.

### Arms Shipments

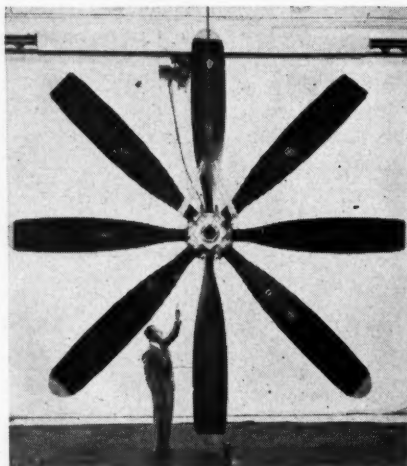
Defense officials said recently that bazookas, rocket launchers, and "certain recoilless rifles" were included in the United States program of arms shipments to friendly foreign countries.

They added that all of these weapons could be used for defense against tanks, which are a major element of the Russian Army.—*The New York Times*.

### 'Octoprop'

The world's largest and most powerful aircraft propeller, an 8-bladed giant over 19 feet in diameter, has been delivered for testing to the Air Materiel Command at Wright Field, Dayton, Ohio.

Nicknamed the "Octoprop" because of its



streamlined resemblance to the well-known tentacled sea monster, the new propeller is a flight model designed for use with a gas turbine engine of 10,000-15,000 horsepower.

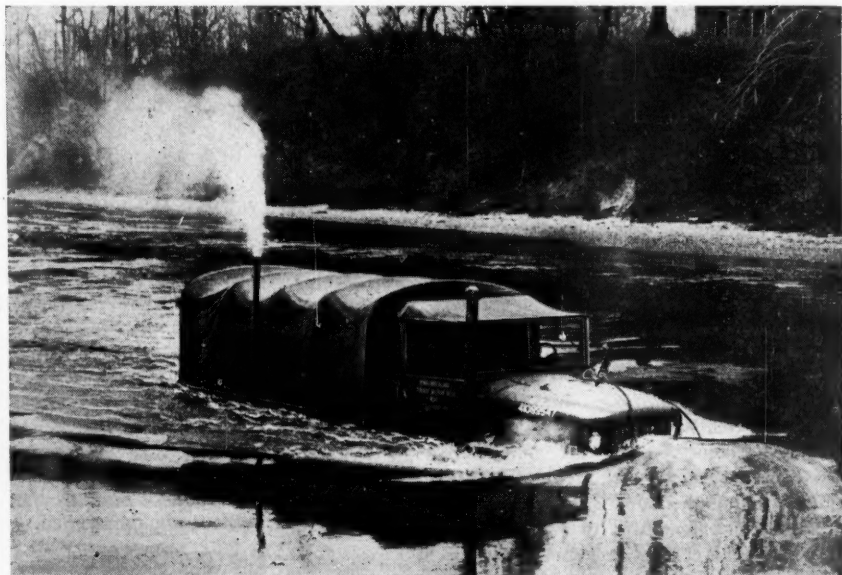
A dual rotation type, it dwarfs in size and performance all previous propellers produced for either reciprocating engines or turboprops. Two rows of four blades, each turning in opposite directions on a specially geared shaft, have a rated thrust far in excess of the force required to lift a four-engine transport of the DC-6 type off the ground with maximum load.

The "Octoprop" may be feathered to reduce drag in the event of engine failure and reversed for use as an aerodynamic brake to shorten landing runs or permit rapid descent from high altitudes.—Air Materiel Command.

### 'Eager Beaver'

The wraps have been taken off a new Army Ordnance vehicle designed to operate normally in subzero cold, blistering heat,

the power plant with two 5-foot verticle extension pipes. One, known as "snorkel," is for air intake, the other, named



The Army's new "Eager Beaver" takes to water like the animal it's named after. Here, it is shown cruising in Chesapeake Bay, Maryland, during recent Army Ordnance tests.

or with its engine completely submerged in water. It's the "Eager Beaver," a 2½-ton truck powered by a 145-horsepower engine.

Tests by the Army Ordnance Corps have proved that the carrier will perform satisfactorily at 65 below or 125 degrees above zero, also with the engine completely submerged. A cruising speed of 60 miles an hour can be maintained on a straightaway road with a 5-ton load. It can also carry this same load up a 60 percent grade.

Carrying 2½ tons on terrain off the highways, the truck can cross a 7-foot-deep stream under its own power. This amphibian operation is made possible by equipping

"snorter," serves as an exhaust. Both protrude above water level.

As the engine is completely waterproofed, it is only necessary for the driver to keep his foot on the accelerator and his head in the air to proceed as though he were on dry land. The truck can be driven off a landing barge into surf and go into action immediately.

Direct power is delivered to all six wheels of the vehicle, which has a 154-inch wheelbase. The waterproofed engine can be shut off or started while submerged. All parts are treated to resist effects of dust, water, corrosion, and fungi.—*The New York Times*.

### Glass Ribbon

Through the use of glass ribbon in the place of mica sheets in miniature condensers, the Army Signal Corps expects to achieve a saving of 50 to 70 percent in manpower during mass production.

The glass ribbon capacitors were developed by the Corning Glass Works of Corning, New York, under a Signal Corps research and development contract. Glass ribbon is used as the dielectric, the insulation between the charged plates of the condenser, and aluminum foil as the electrodes. They are sealed in a glass case that is impervious to atmospheric moisture and other troublesome climatic effects.

A huge manpower saving in mass production is foreseen because the glass ribbon will be of uniform thickness, whereas sheets of mica now have to be hand-sorted for uniform thickness and quality. From low frequency to self-resonant frequency, the new miniature capacitors equal or exceed the performance of equivalent mica condensers. The glass condensers are one-fifth to one-sixth the size of equivalent mica capacitors. In addition, production and stocking problems will be simplified by a reduction of grade styles from 15 to 2.—Department of Defense.

### Laboratory Runway

A new portable testing runway, for laboratory testing of airplane landing gears under realistic conditions, has been developed for the US Air Force.

Basically, it consists of two large endless belts running over seven rollers and driven by a 250-horsepower electric motor at from 50 to 60 mph. Aircraft gears are dropped under controlled conditions onto the moving belts to simulate actual wheel spin-ups. Dynamic spring-back loads, cross-wind landing, and nosewheel shimmy conditions can be created and tested.—*Aero Digest*.

### Helmet Replacement

A new helmet assembly, consisting of an aluminum shell and shock-resistant plastic liner, designed to replace the present steel helmet and thin plastic liner, has been designed by the Army Quartermaster Corps



Plastic liner without aluminum shell.

and will be produced in limited quantity for field tests prior to standardization.

Fifteen percent lighter in weight than the present helmet, the new assembly is cut higher in front for better vision and lower in the back for neck protection. Unlike the present helmet and liner combination, where the principal protection is afforded by the steel helmet, the impact resistance of the new combination lies principally in the liner. Preliminary tests indicate that the new liner, alone, affords as much resistance to shell fragments and falling objects as the present helmet and liner together. The aluminum shell, while affording additional protection, is intended primarily for use as a cooking utensil, shaving mug, and water bucket.—Department of Defense release and photo.

## GREAT BRITAIN

### Jet Ship

A converted paddle boat driven by four screaming airplane engines recently made the world's first test of pure jet propulsion on the water.

The vessel was the 62-year-old Clyde River veteran *Lucy Ashton*. Fitted out



The jet-propelled *Lucy Ashton*.

with four Rolls-Royce Derwent V engines similar to those used by jet fighters, she moved up and down the Clyde at a good but undisclosed speed in her preliminary trials. The jet engines are mounted in a bank on the deck amidship. Each delivers a thrust of 3,500 pounds.

Purpose of the test is to work out figures on the full resistance of jet-powered vessels.—*The New York Times*.

### Atomic Drug

Discovery of a drug injection that may provide an "internal shield" against atomic rays has been reported by three British government researchers.

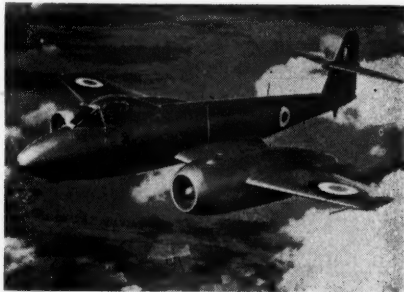
The drug is thiourea, a substance commonly obtained by heating urea, one of the main constituents of animal urine.

In experiments carried on at the government atomic laboratory in Harwell, mice were injected with the drug and then exposed to lethal doses of X-rays. Of nine mice so treated, eight survived.

Mortality among mice either untreated or injected with a variety of other drugs ranged from 14 to 100 percent.—*The New York Times*.

### Jet Power Plant

A sleek Gloster *Meteor* 8 interceptor fighter, powered with twin *Sapphire* turbojets, is Britain's newest bid for supremacy in jet-powered military air-



*Meteor* 8 with twin *Sapphire* turbojets.

craft. The *Meteor* 8's twin *Sapphires* develop a thrust of 7,200 pounds each, and are the most economical consumers of fuel among jet aircraft Britain has ever built.

Detailed statistics of the *Sapphire* have not been revealed, but reports say that one engine has as much power as all four engines in a *Superfort*.

A British test pilot said that he could climb to 40,000 feet in less than 4 minutes. With only one engine running, he asserted the *Meteor*'s speed still would exceed 600 mph.—News release.

### British Anti-Lewisite

A new antidote for arsenic poisoning of animals has been found in a wartime drug which would have been widely used by humans had poison gas attack ever come.

The drug is BAL, short for British Anti-Lewisite. Now it is being used to save the lives of horses and cattle accidentally poisoned on farms and ranches.

BAL seems to combine with the atoms of arsenic, forming a new substance which is easily flushed from the animal system.—*Science News Letter*.

## ITALY

### Army Increase

The Italian Government is contemplating increasing its armed forces from 170,000 to 250,000 men; the maximum strength permitted in the Peace Treaty. The Minister of Defense stated that Italian ground forces now include 8 infantry divisions, 1 armored brigade, and 1 mountain brigade. The present ground forces will be increased to 12 divisions, exclusive of additional mountain brigades. One of the new divisions will be an armored division.—*Allgemeine Schweizerische Militarzeitschrift*, Switzerland.

## SWEDEN

### Defense Measures

Sweden announced recently a series of sweeping new measures to bolster her defenses. The measures were contained in a statement by Premier Tage Erlander.

They included the stepping up of the pace and volume of Sweden's rearmament efforts, the construction of new fortifications and military airports, an increase in the number of reserve officers, and special appropriations to combat any fifth column.

The Premier said a decision had been taken to build more military hospitals and more air raid shelters.

He said the Government contemplated the drafting of more conscripts during 1951 and an increase in the number of Swedish warships in active service.—*The New York Times*.

## PAKISTAN

### Army Chief

Major General Mohammed Ayub Khan will be Commander in Chief of the Pakistani Army replacing General Sir Douglas Gracey who is to retire this year. General Ayub Khan, 43 years old, was trained at Sandhurst in Britain and served in Burma.—*The New York Times*.

## SWITZERLAND

### Tank Increase

Switzerland is planning to buy or build 550 medium tanks at a cost of 112 million dollars. Colonel Pierre de Mural, commander of Swiss mobile troops, said the Military Department was negotiating with foreign governments, notably with Britain and the United States, to purchase the tanks.—*The New York Times*.

## RUMANIA

### Extended Duty

Rumania recently extended from 2 to 3 years the period of mandatory military service for all specialized branches of the armed services. The new order affects all tank crews, artillerymen, air crews, technical ground personnel, sailors, Ministry of Interior troops, and marine technicians.—*The New York Times*.

## AUSTRALIA

### Matériel Survey

The largest stock-taking program in Australia's history is under way to determine how much World War II defense material and equipment is good for use today. Every Army, Navy, and Air Force store, park, and dump from Melbourne to Cairns and Darwin is being checked. After the last War, considerable quantities of vehicles, equipment, and spare parts were put away for safekeeping. Many millions of dollars worth of war surplus were also sold by the Commonwealth Disposals Commission.

Plans are also being made to switch industry to the production of defense requirements. Every factory used for war production between 1940 and 1945 has been tabbed, together with new factories which could be used if required. Australia has plenty of munitions available and the initial defense drive is aimed at speeding up aircraft production.—*Australian Weekly Review*.



## FRANCE

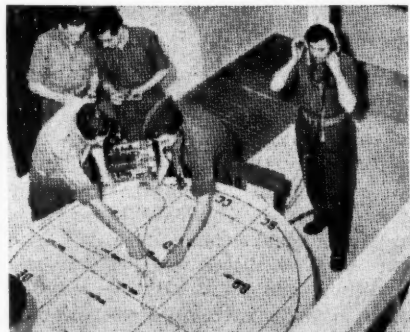
**Exercise 'Cupola'**

The first practical operation of military co-operation between the signatory powers of the Brussels Pact was con-

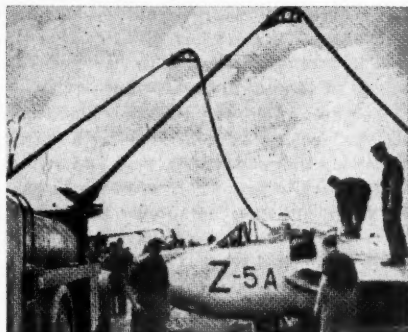
The Exercise involved simulated air attacks against Paris, Brussels, Rotterdam, and other large centers, and the detection



Above, a group of the Netherlands *Meteors* being serviced after returning from an interception mission. Below left, British and French personnel using a radar plotting board to follow the development of the battle. Below right, French ground crews fueling *Vampire* jet planes in preparation for an interception mission.



ducted late last year during Exercise *Cupola*. The principal objective of the Exercise was a comparison of the techniques of the various air forces, with a view toward standardizing operational methods.



and interception of the attacking forces. Radar centers, antiaircraft artillery units, and air forces from Great Britain, France, Belgium, and the Netherlands participated.

*France—Illustration.*

## USSR

### Air Strength

The Soviet Air Force is believed to have a total strength of 600,000 men and 50,000 planes. This includes 25,000 first line aircraft, of which 10,000 are jet-propelled fighters and 2,000 long-range bombers; 18,000 second line aircraft; and 7,000 training planes. Aircraft production is reported to be around 25,000 planes each year.

Taking into account reserves, secondary fronts, and air defense of their country, the Soviets, according to an article in *Le Monde*, France, 17 May 1950, would be able to send 7,000 to 8,000 first line planes into action on the opening of hostilities against Europe.

The major weakness of the Soviet Air Force is in electronic and radar equipment. Nevertheless, this weakness does not prevent it from being a formidable air power.—*France—Illustration*.

### Rocket Practice

The Swedish newspaper *Aftonbladet* reported recently that the Soviet Union has carried out large-scale rocket maneuvers in the eastern Baltic area in which 7-ton guided missiles had been directed at targets up to 700 miles away.

The operation was labeled "silent maneuver" and was combined with radar practice, the newspaper said, adding it had reliable information on which to base its story, but gave no specific attribution.

*Aftonbladet* said the Soviet rockets had been launched at Cranz near the Kurisches Haff in the Soviet-held portion of East Prussia, in a protected area at Leba, Poland, and from the coast of Latvia.

The target was a small island south of Medvezhegorsk in Soviet Karelia, presumably in Lake Onega. It is approximately 700 air miles from Cranz to Lake Onega.—*The New York Times*.

### Armed Forces

According to a recent report, the United States Army believes the Soviet Union has 4,500,000 men under arms and is spending 30 percent of its national income for defense purposes.—*The New York Times*.

### Tank Tactics

Soviet armored force exercises indicate that the antitank mine threat is to be met by the transfer of march routes from roads to river lines. Level river banks are well adapted for tank use; especially for the latest Russian tanks which possess great wading depth and broad tracks.—*Allgemeine Schweizerische Militärschrift*, Switzerland.

### 'Buried Tanks'

In spite of the large amount of excavating required, Soviet armored forces make extensive use of the "buried tanks." The Germans developed a procedure to bring artillery fire on Soviet "buried tanks" during the War, but such targets were hard to hit.—*Allgemeine Schweizerische Militärschrift*, Switzerland.

### Naval Activity

According to British naval experts, the Soviet Union has been stepping up its work of restoring Baltic naval bases which were damaged during the War. More than a dozen powerful bases, stretching from the Gulf of Finland to the vicinity of Kiel, have been put in order. An equal number of smaller bases have been established on the Baltic coast of Poland and the Soviet Zone of Germany. Paralleling these developments is the construction of Soviet bases on the Baltic islands, the construction of launching platforms for remote-controlled missiles, and the reconstruction of East German naval forces.—*Allgemeine Schweizerische Militärschrift*, Switzerland.



# FOREIGN MILITARY DIGESTS

## The Air Attacks on Communications 6 March to 6 June 1944

Translated and digested by the **MILITARY REVIEW** from an article by  
Claude Postel in "Revue Historique de L'Armée" (France) Nos. 1 and 2, 1950.

ALTHOUGH the Anglo-American air forces began their attack on the railway installations controlled by Germany in 1941, it was not until 1944 that the destruction of these installations became systematic, particularly during the 3 months preceding the Normandy invasion. This article will restrict itself to the latter period and a detailed description of the first raids against the French northern railway network.

From the military point of view, the chief characteristics of a railway network are its vulnerability, the multiplicity of its missions, and the ease with which it may be repaired.

Vulnerability results from its extension, the density of its installations at certain points, and the presence of numerous structures such as bridges and tunnels.

Multiplicity of its missions includes its use for civilian supply (bolstering the economic life of a country); the transportation of the wounded and men on leave; and the movement of reinforcements and equipment.

Ease of repair refers to the speed with which the rail network can be rehabili-

tated, thereby reducing the effectiveness of attacks against this form of communications. The Germans in France, as well as in the Reich itself, succeeded in taking advantage of this characteristic and perfected numerous new repair methods. It is in this respect that railways, in the words of Air Marshal Sir Arthur T. Harris, Chief of the Bomber Command, may be considered as "unrewarding targets." For this reason, railway communications occupied only ninth place in the Combined Bomber Offensive Plan established by the Allies at the time of the Casablanca Conference. They were aware that the weakness of their air forces, at that time, would permit only sporadic attacks on isolated targets without lasting effects.

On the other hand, when they had some 4,000 heavy bombers at their disposal, and the plans of Operation *Overlord* had been established, the Allies considered the moment ripe to begin a vast operation of systematic destruction of the railway lines controlled by the enemy.

Officers of the Committee of Operations Analysts hesitatingly determined the list

of objectives, for previous campaigns had provided only meager information on this type of operation. It could not be hoped that the same results would be obtained on the dense French network that had been obtained by the Germans on the weak Polish network. The German attacks of May and June 1940, on the very same French network to which the attention of the Allies was now being directed, had proved unfruitful, and the lessons learned from the attacks of medium and fighter-bombers on the Italian railway network could not be applied to an attack conducted by heavy bombers.

To these technical considerations was added a psychological problem which was impossible to ignore: What would the reaction of the French people be to the destruction of their railway network?

In 1942-1943, the Royal Air Force (RAF) had carried out numerous machine-gun attacks on the French railways. Too weak to conduct an offensive against the fixed installations, the RAF had confined itself to attacks on rolling stock and, particularly, trains, without always having discerned their military or civilian nature. In September 1943, for example, the RAF made 121 machine-gun attacks on the railways and only 14 bombing attacks. About 150 locomotives were destroyed and casualties were high among the railway personnel.

In London, the governments of the occupied territories violently opposed the continuation of such a policy and the resistance organizations in the occupied territories pointed out the danger of such a practice. In December 1943, it was agreed that air attacks in the future would be directed against fixed installations while attacks on rolling stock would be restricted to groups of saboteurs. The results of this new policy were quite noticeable. In November 1943, air attacks had immobilized 73 locomotives while saboteurs immobilized 138. In January 1944, the number of air

attacks dropped to 37 during which 33 locomotives were destroyed, while the sabotage groups put 240 locomotives out of commission.

On 6 March 1944, the campaign of destruction of the French railway lines began. It was to be carried out in three phases.

1. Beginning 6 March: bombing of the large railway centers.

2. Beginning 7 May: bombing of the railway bridges spanning the Seine, the Loire, and the Oise; and the railway bridges situated on the Paris—Etampes—Orleans line.

3. Beginning 20 May: machine-gunning of trains and tracks, and bombing of small stations.

To accomplish this plan, the Anglo-Americans had at their disposal 4,200 heavy bombers, 1,100 medium and light bombers, and more than 2,000 escorting fighters. Opposing these forces, the Germans had only about 150 single-engine fighter planes and 300 twin-engine planes concentrated in Holland, Belgium, and in the west, north, and east of France. The greatest concentration was in the northern French-Belgian zone.

The first attack was launched by the Bomber Command on the night of 6-7 March 1944. The target was the Trappes switch yards located about 25 miles from Paris in the French National Railway Zone [Société Nationale de Chemins de fer Française (SNCF)]. It was the first of 37 targets assigned to the Bomber Command. On this same day, American bombers attacked their first objective, the Hirson switch yards. One hundred B-26 and A-20 medium bombers of the Ninth Air Force attacked, in successive formations, from an altitude of 6,500-10,000 feet. About fifteen hundred 300- and 500-pound bombs were dropped. Three hundred of them fell outside of the switch yards, killing 52 persons and destroying 40 houses. In spite of this large number of misses, the military re-

sults of this operation were appreciable. Three hundred bombs struck the locomotive shed damaging 40 locomotives and rendering all the machine-tools useless. Tracks were completely torn up for a distance of several hundred yards, and all movement was stopped for 2 days.

However, by 10 March, traffic was restored on the coal lines—Hirson-Lille and Hirson-Laon—the most important from the German point of view. Thus, from the very beginning, the characteristic ease of repair of railway lines was revealed.

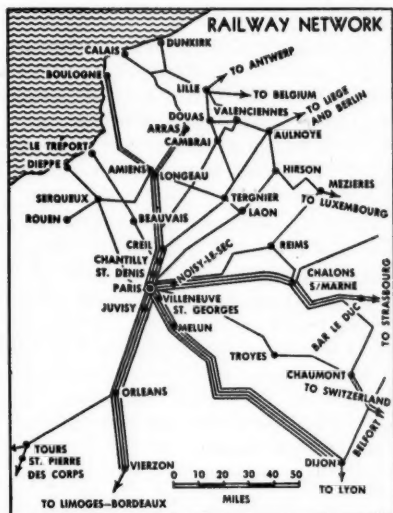
At 2200 on 23 March, the railway center of Laon was the objective of 100 heavy bombers of the RAF Bomber Command. After *Mosquito* Pathfinders marked the target, the bombers arrived and dropped their loads. However, the bombs were dropped before the marking was completed. This haste and an unfortunate selection of a direction of attack, perpendicular to the tracks, resulted in bad dispersion. Out of nearly 1,000 bombs dropped, only 400 struck the railway installations. However, they hit in the right spot. The engine shed was blocked, because the tracks leading to it were torn up, thereby cutting and immobilizing the Soissons line for a week. And most important, the switch yards were useless up to 4 April.

These results, however, were poor compensation for the destruction of the railway employees' housing section, and the destruction of the eastern and western suburbs of the city.

Four times, during March, the large Petit Thérain engine shed and the Creil switch yards were violently attacked by American bombers. At 0013 on 17 March, three waves of *B-26s* dropped 500 bombs causing numerous breaks in the tracks, complete immobilization of the switch yards for an indetermined period, and the complete blockage of the engine shed. Three hundred cars were destroyed or damaged. The day following this attack, only the

Chantilly and Beauvais lines were open for train movements.

French and German crews were in the process of clearing the tracks when, on the 20th, more than 100 American planes again attacked. All repairs that had been completed were nullified. The engine shed,



which had been spared 3 days previously, was partly burned.

On the 23d, a general bombing attack on the Creil and Petit Thérain railway centers was carried out by the heavy bombers of the Eighth Air Force. Petit Thérain was attacked at 1200 by nine waves of *B-17s*. The buildings and the engine shed were entirely destroyed. Two cranes, one of 130 tons capacity, the only one of its kind in France, and another of 50 tons capacity, which was being used in clearing the tracks, were rendered useless. The 130-ton crane, which was overturned onto the Creil-Chantilly tracks, was not righted until 2 months later. Due to the tracks being torn up, 11 locomotives were blocked in the engine shed. Six hundred and fifty cars were destroyed. The attack on Petit

Thérain was hardly over when Creil was hammered. About 40 planes produced considerable damage on the railway lines leading to Beauvais and Chantilly. When the bombers returned to the attack on the 26th, they only hammered ruins. At Petit Thérain, all activity had ceased in the switch yard and the engine shed, and but a single main track had been restored.

The 22 bombing attacks on railway switch yards during March ended with the destruction of the Vaires yards. Due to the geographic location, this operation is outside of the field of this article, however, it should be covered because of its strategic importance.

Vaires, astride the Paris—Strasbourg line, was a point through which all east-west trains had to pass. In spite of its military importance, this objective was not defended against air attacks. It was protected only when military trains with light antiaircraft guns mounted on cars were in the station. The RAF encountered this type of defense during their attack on the night of 29-30 March.

After successfully marking the target to indicate the center of the switch yards, the waves of bombers arrived, dropping their bombs perpendicular to the tracks. The first wave met resistance from antiaircraft guns on the trains standing in the yards, but the second wave reduced the defense to silence.

Results were remarkable for the dispersion zone did not extend over 220 yards beyond the target. Three troop trains in the yard were pulverized by direct hits and the explosion of an ammunition train. Where the latter had stood, there was left only a trench some 20 feet deep by 220 yards long. One of the two engine sheds was completely destroyed, blocking all traffic between Paris and Strasbourg.

Thus ended the first month of the systematic destruction of German communications in France.

In April, the Anglo-American air forces began to extend their zone of action. The Allied High Command, having been informed of the effects of the previous month's bombings through its own intelligence sections and the French resistance networks, started dispatching bombers in a vast operation aimed at blocking the railway networks of the north, west, and east. This operation was concentrated particularly on objectives in the Paris region, for it was in this area that the Germans were constructing new junction points to replace the connecting centers destroyed by previous bombings.

The attacks began with the bombing of Villeneuve—Saint Georges and Lille la Délivrance, on the night of 9-10 April. The following day, more than 200 four-engine bombers of the RAF attacked Saint Pierre des Corps near Tours. The railway installations at Tours and Saint Pierre des Corps constituted one of the largest rail centers of the zone southwest of Paris. There were nine lines branching out from these two centers in the direction of Paris, Lyon, Nantes, and Bordeaux. The railway yards, extending over a distance of more than 3 miles, were one of the largest in France. During an attack on this objective, which lasted for more than 2½ hours, British bombers dropped 1,200 bombs and thousands of incendiary bombs. The Saint Pierre des Corps passenger station, the engine shed, and the switch yards were completely destroyed as were the central switching post and the car shops at Tours.

That same night, the Tergnier switch yards were pounded by more than 1,000 bombs. However, only 300 bombs fell on railway installations. Despite this dispersion, and the fact that the alert had not been given, civilian losses were relatively light. The military results, on the other hand, were considerable. Some 50 locomotives were blocked in the engine shed, all the tracks leading to the switch yards were cut, and the highway bridge which



passed over the switch yards was dropped onto the tracks. However, by the morning of the 12th, traffic had been resumed in the direction of Amiens, Saint Quentin, and Laon. However, in Laon, a 30-minute bombing attack, carried out a few hours after the attack on Tergnier, blocked all movement toward the north or the east. That same night, Aulnoye was pounded for 25 minutes. These three attacks stopped all rail movement between Paris and the eastern sector of the northern coal basin.

On the night of 18-19 April, a series of bombing attacks directed against Paris and surrounding suburbs were begun. That night, shortly after midnight, several hundred heavy bombers attacked Noisy le Sec and Juvisy. At Noisy le Sec, more than 3,800 houses were destroyed or damaged. Some 15,000 of the city's 23,000 inhabitants were victims in one way or another. At Juvisy, the aerial markers were driven by the wind in the direction of the city, which bore the brunt of the attack. All in all, the military results of these attacks were of little value. At 0008 on 21 April, the railway stations of La Chapelle and la Plaine Saint Denis, north of Paris, were bombed. Both of these objectives included a large switch yard and an engine shed. They constituted the railway advance guard of Paris in the direction of the Channel, Belgium, and the Franco-Belgian coal basin. Despite their importance, these installations were protected only by the German anti-aircraft artillery protecting Paris. Sixteen *Mosquito* Pathfinders flew over the northern part of Paris, dropping numerous flares and two marking bombs, which marked off a vast sector between Aubervilliers and the Rochechouart Boulevard. A few minutes later, 10 waves totaling about 400 bombers attacked at 5-minute intervals. At 0130, a second attack occurred with bombs dropped, by 13 waves, at 30-second intervals. It was a quick operation which, though adding little to the demolitions already suffered by the

railway installations, did add considerably to the losses suffered by the civilian population. In this raid 1,420 houses were destroyed or damaged and 1,101 persons killed or wounded.

We are unable to share the opinion of Air Marshal Harris, Chief of the RAF Bomber Command, who cites the bombing of Paris as an example of an astonishingly accurate attack, but we must, nevertheless, agree that the military results of the operation were very important.

All traffic was stopped up to the end of April on the Paris—Calais, Paris—Brussels, and Paris—Soissons lines.

The switch yards and the freight depot at Paris—La Chapelle and the engine shed at la Plaine Saint Denis were destroyed.

Psychologically, the Germans exploited to the maximum the losses sustained by the civilian population and the damage done the Church of the Sacré-Coeur at Montmartre.

On the night of 22-23 April, the Laon switch yards, which had been attacked 11 days before, underwent a violent 2-hour bombing attack. More than 2,000 bombs were dropped, destroying or damaging 30 engines and 1,500 cars.

The last attack in April against the northern network was conducted against Aulnoye on the night of 27-28. As at Paris and Laon, the bombers attacked in two phases. After they had passed, the switch yards were completely destroyed.

Despite the 51 bombing attacks on the French railway centers, the Germans succeeded in continuing normal troop transportation. However, civilian freight and passenger service was reduced 34 percent.

In preparation for the Normandy invasion, a new bombing phase began: the destruction of bridges.

In order to mislead the Germans as to the location of the planned invasion, and in order to fence in the battle area, the Allies' bombing plan called for the destruction of all highway and railway bridges

between the Seine and the Meuse from Paris to Le Havre. Several days prior to the landings, and up to the end of August, these bombings were complemented by attacks on bridges over the Loire, and the systematic strafing of trains, tracks, and stations of secondary importance.

The operations were carried out by the fighters, fighter-bombers, and medium bombers of the American Eighth and Ninth Air Forces and the British Second Tactical Air Force.

On 7 May, the day the second phase began, bridges at Mantes, Marines, Oissel, Orival, Serqueux, and Vernon were attacked. However, the attacks against the bridges did not reduce the tempo of the attacks by heavy bombers on the switch yards and engine sheds.

On 10 May, the Allies inaugurated new tactics; the daylight bombing of targets by American medium and fighter-bombers and night bombings carried out by the heavy bombers of the RAF. The Fives-Lille switch yards were bombed at 1600 on that day by medium bombers and again at 2330 by heavy bombers. That attack cut the Lille—Tournai and Lille—Belgium lines and stopped rail traffic for several days. The same technique was used on the 27th against the rail yards of Amiens—Longueau.

Bombing attacks by the Allies increased during May and many cities were hit in repeated attacks. Valenciennes and Mantes were bombed six times; Creil, five times; and Douai, three times. To these methodical attacks were added the incessant machine-gunning of trains, and sabotage by the French Forces of the Interior.

A few days before the Normandy invasion, French rail traffic was almost completely paralyzed north of the Loire. German traffic suffered so severely from tie-ups that Colonel Hans Höffner, commander of the Western General Bureau of Transportation, wrote General von Rundstedt, commander of the German forces in

the West: "No troop movements by rail can be counted on during the 2 weeks following the invasion."

The traffic of the *Todt* Organization was almost interrupted completely, which meant a serious slowdown, if not an entire stoppage, of the fortification building activities on the Atlantic coast. The plans of the Western General Bureau of Transportation, which counted on the movement of 72 troop trains daily between Paris and northern France, the number of trains necessary to transport a division, had to be revised. At the end of May, only 30 trains daily were moving. Twenty were troop trains, the rest were coal trains traveling between the Sarre and Paris.

On 6 June 1944, when the Anglo-American forces landed in Normandy, the railway networks of eastern, northern, and western France were completely paralyzed. German reinforcements coming from Germany or northern Europe did not arrive in time to participate in the battle of the beaches.

It is an obvious and well-established fact that the campaign directed against the railway network of western Europe contributed largely toward the defeat of Von Rundstedt's armies. Colonel Höffner stated that if the Germans had been able to maintain the February 1944 level of railway transportation, the Anglo-American landings would have failed. It is possible that the Allied forces could have been contained and that the Avranches breakthrough could have been prevented if the *Wehrmacht* had been reinforced with four divisions. But the German High Command did not consider it worthwhile to send reinforcements to the front which would arrive late, and short of equipment. Allied planes would generally let the first trains pass and attack only the sixth or eighth train. Units would then arrive at the front without their equipment.

The *Wehrmacht* was forced to use highway transportation when rail facilities

bogged down. It was then that the attacks against the bridges revealed their full worth. Even when the bridges were replaced by the Germans, they could not handle the normal flow of traffic. The congestions which resulted became prime targets for Allied medium and fighter-bombers.

The organization for the operation of rail facilities was such as to hinder progress in easing the effects of the bombings. The *Reichsbahn* had to deal with the French employees of the SNCF, which, in all echelons, did everything possible to sabotage German plans. Also, there was no unity of direction in the organization of the *Reichsbahn* in France. Civilian transportation was under civilian control which was directly responsible to the *Reichsbahn* Director General in the German Ministry of Transportation. Military transportation was controlled entirely by the General Bureau of Transportation, which was directly responsible to General von Rundstedt. The General Bureau of Transportation had no control over the *Todt* Organization or German and French civilian repair crews. This dual control was not corrected until January 1945, when the *Wehrmacht* was given unified control over the railways.

The Allied bombing attacks against the

French and Belgian railway networks taught one essential lesson: Civilian traffic is disturbed long before military traffic, which is never entirely stopped. This fact served as a basis for the great air attacks carried out against the German rail network on 22 and 23 February 1945 (Operation *Clarion*), and during March in conjunction with the attack on the Ruhr.

It is obvious, from the economic point of view, that the Allied air attacks were disastrous to France. Railway traffic, which had attained its maximum in 1943 with 24 billion passenger miles and 23.6 billion ton miles, suffered, in 1944, by a reduction of almost 50 percent.

At the time of the French liberation, the total losses suffered by the SNCF, as the result of air attacks, sabotage, combat, and pillage, were as follows: 14,000 locomotives, 310,000 cars, 21,000 passenger cars disappeared, destroyed, or badly damaged; 25 switch yards out of 40 destroyed; 19 repair shops out of 33 destroyed; 120 main passenger stations out of 330 destroyed or badly damaged; 3,203 bridges and viaducts destroyed; 3,025 miles of track destroyed; and 688 signal stations destroyed or damaged.

Despite this, the first Allied troop train was rolling on 22 July in the Cotentin peninsula, 46 days after the landing.

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The German experience suggests that even a first-class military power—rugged and resilient as Germany was—cannot live long under full-scale and free exploitation of air weapons over the heart of its territory. By the beginning of 1945, before the invasion of the homeland itself, Germany was reaching a state of helplessness. Her armament production was falling irretrievably, orderliness in effort was disappearing, and total disruption and disintegration were well along. Her armies were still in the field. But with the impending collapse of the supporting economy, the indications are convincing that they would have had to cease fighting—any effective fighting—within a few months. Germany was mortally wounded.

*U.S. Strategic Bombing Survey*

## The Soviet Army is an Entirely Armored Army

Translated and digested by the MILITARY REVIEW from an article by Claude Vincent in the "Revue Militaire Suisse" (Switzerland) May 1950.

IN RECENT months [before June 1950], Soviet diplomacy appeared to be making efforts to ease the tension of the international situation. But it is clear that there can be no real appeasement as long as the USSR maintains a powerful army equipped for offensive action, and continues to develop, in peacetime, a gigantic war industry. This vast war machine constitutes a permanent threat to Western Europe, whose armed forces have but scarcely begun to reorganize.

It is very difficult to obtain information concerning the exact war potential of the Soviet Union. For that reason, any confidential information from the other side of the "Iron Curtain," which emphasizes the great effort being made by the Soviets toward the development of their armored forces, is examined with interest.

### Increased Tank Production

Soviet factories are presently turning out more than 65,000 tanks per year on a 7-day per week production schedule. However, it should be observed that the proportion of defective matériel reaches, at times, 45 percent.

The employment of massed armored and motorized formations was the decisive factor in the Soviet victory over the Germans in World War II. However, the Soviet Army did not possess superiority in tank quality at the end of the War. Neither the American, English, nor Soviet factories were able to produce tanks comparable to the German *Royal Tiger* or *Pursuit Tiger* tanks. It was mass production that provided the winning factor, for in 1943, the Soviet Army was able to match each German tank with three of its own. This figure increased to 10 to 1 in 1944, and 20 to 1 by the end of the War.

The Soviet High Command is fully aware of the value of numerical superiority in tank production. Factories have been established in scattered locations all over the USSR. The principal centers for tank production are Gorki, Leningrad, Stalingrad, the Urals, the Kuznetsk Basin, and Khabarovsk in the Far East.

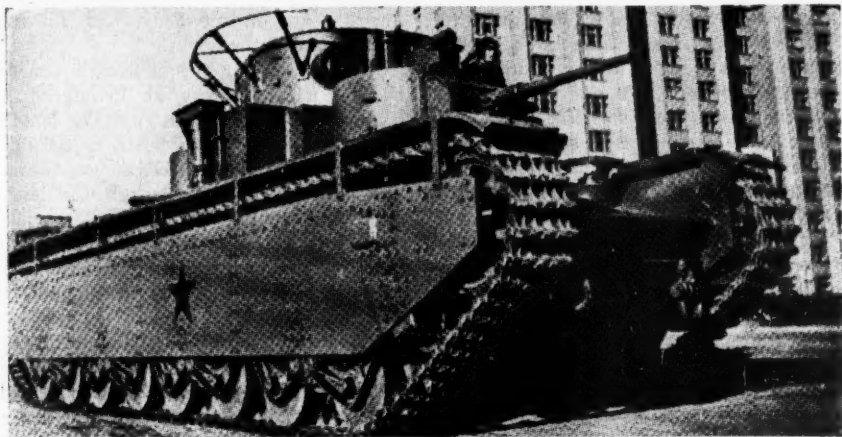
The largest tank production center is Gorki. Two representative factories in that area employ 25,000 workers, 20,000 of whom are deported persons, mostly women. Leningrad factories employ 26,500 workers. Stalingrad has three gigantic tank factories, reconstructed since the end of the War, which employ 195,000 workers, mostly deported persons or prisoners of war.

Sverdlovsk, also, has an enormous factory and, 4½ miles from there, a new tank factory is under construction which will probably be one of the largest in the USSR. Nijni-Taghorsk, northeast of Sverdlovsk, employs 19,000 workers in its central works. Another factory, in the Kuznetsk mining region, employs 15,000 workers. Tanks destined for the Far East are produced at Khabarovsk, the interior industrial center on the Amur River.

In addition to these gigantic works, a considerable number of smaller factories exist in the USSR. Even the smaller Soviet works are larger than the average American or English tank factories.

### Working Conditions

All factories maintain a 7-day work week and shut down only 3 days each year for national holidays. Industry, under military control, is also under the surveillance of the NKVD (Special Police). Special courts, set up in all factories, try cases of sabotage, and death sentences are common, with executions taking place immedi-



Soviet armor has experienced revolutionary changes in design and numbers during the past decade. High-silhouette, riveted-body models (such as the one above) have been modernized and replaced with low-silhouette, all-cast-body models. Radical changes in the early *Joseph Stalin* model (right) have produced a very potent weapon with reduced vulnerability (below).



ately after convictions. Those guilty of lesser offenses, such as being late or failing to meet output schedules, are punished by the withholding of 2-, 3-, or 4-weeks' wages. Despite these regulations, the percentage of defective production is still very high. Defective production reached a maximum of 70 percent, in the Orsk factory, in 1946. Defective material accounted for 40 percent of this, and mistakes and passive resistance on the part of the workers accounted for the other 30 percent. In 1947, defective production in this factory averaged 45 percent.

The Soviet Government carefully hides the real volume of its tank production, and the characteristics of its latest models. Only heavy and medium tanks are shown in public during reviews on the Red Square. However, it appears that the production of light and fast tank models, capable of great fire power, is being emphasized by the Soviets.

### Trends in Tank Design

In 1944-1945, the antitank gun of the German *Tiger* tank penetrated the armor of the Soviet *Stalin* tank, and it was only by operating in great masses that the Soviet tanks were able to gain victory.

In any future conflict, Soviet tanks would quickly find themselves faced with equal masses of combat tanks. Therefore, the Soviets need a tank which combines high speed, long-range weapons, medium weight, adequate armor, and better protection of vulnerable spots.

The current model, the *T 43*, was inspired by the Battle of Tobruk in which Field Marshal Erwin Rommel's heavy tanks, equipped with long-range guns, were victorious over English heavy tanks. One of the first models of the *T 43* was a 30-ton tank equipped with two machine guns and a 122-mm antitank gun. A modernized *Stalin* tank of 54 tons is being produced in factories at Chelyabinsk and Sverdlovsk. This model has 60- to 65-mm of

armor plate on the body, and 150-mm armor plate on the turret.

Another new 42-ton tank being produced by the Kirov factory at Leningrad is equipped with a 157-mm gun. The length of this gun is unknown, but it is probably a copy of a similar American gun which the Soviets obtained through the lend-lease agreement.

Production line methods are being employed in the manufacture of a reconnaissance tank, armed with an excellent 76.5-mm gun.

The new models, like the old, are mounted on caterpillar treads which have been especially designed for snow and marshy terrain, and whose width, for a medium tank, is 27½ inches. The turrets are cast in a single piece, and the front armor is hardened by a special process. All of these tanks are covered with a non-magnetic material.

### Germans in Soviet Industry

Soviet engineers are assisted by German experts from prisoner of war camps, and technicians brought to the USSR after the War. The use of German specialists has had its drawbacks. Leaks of information occur and, as a result, we know a great deal more about the Soviet armored forces today than we did in 1939.

The use of these German technicians has resulted in an improvement in optical equipment, a matter of great importance to the Soviets. The Soviets now have the German Zeiss Works at their disposal. It was transferred to Krasnogorsk, near Moscow, together with its 7,000 workers and 7,000 machine tools.

The Schott Works, another German factory, had 92 percent of its machines seized by the Soviets and moved to Krasnogorsk along with its entire technical staff and a large number of workers.

The Soviets are more considerate of German technicians and skilled workers than of any similar category of Russian work-



ers, for these technicians have the task of training lens polishers and mechanics capable of producing precision instruments.

One of the most capable engineers of German industry, Fritz Kreis, chief of the research department of "Auto-Union" at Chemnitz, has been given the mission of developing a system of immediate replacement of worn or damaged parts on Soviet tanks.

#### Soviet Weaknesses

Despite this great effort toward improvement, the Soviet armored forces still have a number of weak points. The transportation system is not sufficient to move the new equipment. Great masses of tanks remain for weeks and months in the factory yards exposed to the weather before they can be moved. The radio equipment is not adapted to the tactical requirements of a giant armored force. The fuel supply presents serious problems. Cartography is only in its initial stage.

Frequently, the railroads are incapable of moving such heavy machines and, even in the western provinces of the Ukraine where the railroad network is better, every movement of troops or equipment results in terrible bottlenecks.

In 1947, when numerous tank and motorized infantry units were massed in the Vinnitsa-Berditchef-Jitomir area, all railroad passenger and freight service had to be suspended for several weeks.

In order to provide their tanks with fuel during the War, the Soviets devised fantastic methods. Civilians on foot, women and children, rolled barrels of fuel for miles. When this expedient failed, especially during the winter months, barrels of fuel were taken in tow by the tanks which were to use them, or were transported by endless convoys of horse-drawn carts or sleighs.

A large number of trucks have been produced since the end of the War, but Soviet supply problems are still a major weakness of the Soviet Army.

During World War II, a majority of the Soviet tanks lacked the equipment necessary for radio communication and were, thereby, forced to communicate by visual signals. As long as tanks were employed as an enormous battering ram, rather than as tactical forces, this weakness had little effect on their efficiency. But in a future conflict, matters would be quite different.

A large number of factories have been put into service and German military radio experts in the Soviet Zone of Germany have been moved to the USSR. Nothing is known of the improvements obtained, but it appears that the chances of substantial progress are slight in this field. One of the main obstacles is in the field of skilled labor. It is not very probable that the Soviets will succeed in catching up with the technological developments in radio and radar presently held by the United States and Great Britain.

The Soviets are also very far behind in cartography. Many changes have been made in this field by the German geographer, Schultz-Kampfhankel, who, in North Africa under the command of Field Marshal Rommel, made reconnaissance flights above the probable battlefields, took geological specimens and wrote in, on the military maps, notes concerning the nature of the soil on which the tank battles were to take place. However, Schultz-Kampfhankel escaped through the "Iron Curtain" in 1946 and is now working in the United States.

Despite these weak points, it appears that Soviet leaders consider the armored forces prepared in the event of a conflict.

#### Soviet Strategy

How does the Soviet High Command expect to use its numerical superiority in tanks?

General opinion assigns the Soviet armored forces the task of occupying, by rapid offensives, the countries of the Eastern Mediterranean and the coasts of West-

ern and Northern Europe, thus preventing the establishment of enemy bases.

Since 1947, the Kremlin has been persuaded to believe that its enemies will use the atomic bomb to create a radioactive desert throughout the region between the Baltic and the Black Sea. For this reason, the Soviet armored forces have been entirely regrouped, and the best trained and

equipped tank formations, which were formerly in Eastern Germany and in Hungary, have been gradually replaced by inferior units.

In spite of its wants and defects, the Soviet armored force would constitute a redoubtable and prepared mass if the order were given for it to go into action.

## Poison and Antidote

✓ Digested by the MILITARY REVIEW from an article by Captain Russell Grenfell in "The Navy" (Great Britain) April 1950. S

WHAT is to be the future of navies? That is the question that the members of every Board of Admiralty have been asking themselves and each other for generations past. It is, indeed, the key question that every Board has to solve to the best of its ability.

Yet, with all the expert advice and confidential information they have at their disposal, their Lordships do not always get the answer right. Lord Fisher surmised that "speed was armor," but was proved disastrously wrong. In 1938, a former First Lord declared that the submarine was no longer a menace to the British Empire; and within 3 years we were in desperate straits from U-boat attack.

How difficult, therefore, must it be for an unofficial writer like myself, with no access to the latest scientific data, to express a useful opinion on so uncertain a subject. The best I can hope to do is to draw what inferences I can from historical developments in so far as they appear to have any bearing on future trends.

### The Capital Ship

The first point that comes to my mind is the question of the capital ship. It seems to be fairly generally accepted in the present-day Navy that the aircraft carrier has replaced the battleship as the

primary striking weapon. For this belief, there are obvious historical grounds. Throughout history, longer range has been of decisive value. The medieval boarding tactics were rendered obsolete by the broadside cannon, which could hit and cripple from a distance. In the same way, the muzzle-loader had to give way to the rifled gun that shot farther, and even then, battles took place at increasing ranges as each side endeavored to gain the golden advantage of hitting without being hit.

It is its ability to outrange the gun that gives the carrier its present title to primacy among surface vessels. But whether this will remain a permanent title is a more open question. No means have yet been found to prevent the gun projectile, once fired, from reaching its ballistic destination.

That does not, however, apply to the aircraft from a carrier. They can be shot down before reaching the torpedo or bomb-dropping position against their selected target; which destroys both the planes and the missiles they carry.

How far the pendulum can be made to swing back, in this way, is a matter of scientific development on which I am not qualified to speak. But the homing

rocket and the proximity fuse may well have startling results; and one even hears rumors of rays which might detonate atomic bombs in the air. It is, therefore, possible that antiaircraft defense might gain, if only temporarily, such an ascendancy over air attack as seriously to reduce the carrier's value, and, by the same token, to restore that of the heavy-gun vessel.

In this connection, history offers a warning against assuming too rapid obsolescence. Ships were still being captured by boarding in Nelson's day, 200 years after the Spanish Armada had shown the power of the gun.

There was at least one occasion in the last War, when Japanese battleships came within gun range of American carriers, but for some reason failed to make the most of that opportunity. Nor did the Japanese appear to have shown much awareness of a possible partnership between gun vessel and carrier. At Midway, they placed their battleships some distance behind their carriers, with the natural result that the former, having by comparison only a tiny action range, never came into the picture at all. Had the Japanese stationed their battleships 100 miles ahead of their carriers, the American carriers might have been severely embarrassed by the possibility of a surface contact, just when they wanted the fullest freedom for dealing with the enemy carriers.

### Present-day Problems

However, the problem nowadays is what to build with money supplies that are always meager in peacetime. Shall it, apart from minor classes, be all carriers, or shall some battleships—whether gun or rocket is a technical matter—be included? I do not envy the Sea Lords that decision.

So far as history is any guide, one can say that fleet development has been less a process of supersession than of addition. Every new weapon has, almost without exception, brought into being one more

variety of warship without displacing the older types. There has also been a continuous race between offense and defense, invention and counterinvention.

Of both these points, the submarine offers a good example. It was so successful in World War I that it nearly knocked us out of the War, and a well-known admiral declared that it had killed the battleship. But after the War was over, science produced the Asdic detecting apparatus, and then everyone said the submarine was through. Unfortunately, the authorities carried their reliance on this device so far that they made the cardinal blunder, perhaps under Treasury pressure, of providing too few ships to carry it. The result was a fearful loss of shipping in World War II, until adequate escorts and coastal aircraft brought the danger under control. No sooner, however, were we breathing freely again than the advent of the *snorkel* negated the effect of aircraft and, by thus halving the efficiency of our antisubmarine organization, re-established the position of the U-boat.

Thus, it has always gone on in regard to the weapons of war. First, one is ahead in the race. Then the counterweapon catches up and passes it.

### The Atomic Bomb

This thought is encouraging in relation to the atom (or hydrogen) bomb about which so much world-wide neurosis is being manifested. Unless history is a lying jade, our scientists will find some way, not necessarily of defeating it, but at least of reducing its menace to manageable proportions. After all, the bomb has almost certainly to be taken to its dropping point by a human agency. Destroy, intimidate, or mislead the carrier and a million pounds worth of explosive may waste its violence over the empty sea or against a few villagers and cattle, leaving the war to be decided, as all wars have so far been, by the clash of orthodox armed forces.

What the means are that science will produce for the above purpose I cannot tell. Perhaps no one can tell as yet. But we should recollect that no one could have foretold the Asdic before the need for it arose, while a little later, no one could have

foreseen the development of radar until the urgency of the air danger somehow led to its discovery. Is this apparently invariable process to be falsified for the first time in the case of the atom bomb? This I find difficult to believe.

## Soviet Night Attacks

Translated and digested by the **MILITARY REVIEW** from an article in "Revue Militaire d'Information" (France) 10 May 1950.

UP TO World War II, the Infantry Combat Regulations of the Soviet Army did not prescribe night attacks, except for the solution of simple problems. The Regulations recommended that difficult night operations should be avoided and that attacking units be given only very limited and definite missions. Artillery and mortars were not to intervene in the fighting, unless the enemy discovered the preparations for the operation, or the movement of the attacking units, and opened fire on them.

However, during the War, night attacks were used in which there was military preparation, participation by units of all arms, and the execution of complex operations.

Two typical night attacks made by Soviet units were the battles for Ionachtal and Plessien, both of which were very successful.

The first operation, in October 1944, for the capture of Ionachtal, consisted of a night attack led by an infantry regiment of three battalions, reinforced by a combat engineer company, and four antiaircraft artillery batteries. There was no artillery preparation used immediately preceding the attack.

The commander's tactical plan and groupment called for the encirclement of the strong point by an attack directed against the German flanks and rear, while a diversionary frontal attack was being

made. A strong German force opposed the Soviet unit, and several lines of trenches and barbed wire obstacles surrounded the strong point. It was a daring operation to carry out at night.

The second operation, in February 1945, for the capture of Plessien, followed a maneuver of the same type, but with an artillery preparation.

Both attacks succeeded. The operations had been prepared in great detail. Liaison had been established between the units attacking frontally and those on the flanks.

### Lessons Learned

War experience proved that night attacks can be carried out under conditions other than those indicated in the Soviet Regulations. War experience also showed that night attacks can be made in the following way:

The infantry assembles in its jump-off position, and then all available firepower (automatic weapons and supporting artillery) is suddenly concentrated on the attack objective and its approaches, as well as on the enemy positions. This firepower is later shifted to cover the flanks of the attacking units. Then, the infantry, with the support of tanks and accompanying weapons, moves forward vigorously, firing as it advances, to seize possession of the objective.

The commander's decisions must be based

on a thorough knowledge of the terrain; the nature of the enemy's defenses; the attitude of the enemy during the day; and the enemy's degree of vigilance and combat effectiveness.

Two important factors which must be considered to ensure success during night attacks are:

1. The composition of the groups making the night attack.

2. The problem of orientation during a night attack.

In considering the first factor, the Infantry Regulations say nothing of the composition of special groups for night attacks. But, during the War, night operations were conducted by specially constituted groups, particularly against strongly defended points, necessitating the action of assault forces. Numerous examples prove the efficacy of the groups, which provided a great degree of fire power, thus justifying their employment.

Attacking groups were generally composed of the following type units, depending on the difficulties presented by the objective:

1. One infantry company reinforced by one or two machine-gun platoons, one 82-mm mortar platoon, one antitank-rifle platoon, two 45-mm guns, two 76-mm guns from the division artillery, one tank platoon, one combat engineer platoon, and at least one battalion of direct support artillery.

2. One infantry battalion reinforced by one company of machine-pistol troops, three or four 76-mm guns (regimental artillery), two to four 76-mm guns (division artillery), and at least one regiment of direct support artillery.

The supporting artillery was under the orders of the commander of the tactical group from the beginning of the attack.

Great attention was given to the preparation of the operation. Forty-eight hours before the attack, the units were sent to the rear to conduct a rehearsal of the night

operation. All formations composing the group participated. The exercise was directed by the commander of the group, and was conducted in a manner similar to that of the anticipated operation.

The attack objectives were fixed in accordance with the nature of the enemy's defenses, the terrain, and the enemy's degree of vigilance and combat effectiveness. The different missions were fixed on the terrain at least 1½ or 2 hours before nightfall. The infantry assumed the customary formations, though with smaller distances and intervals. Mortars and machine guns were placed to protect the flanks of the units.

The infantry attacked the objective, either without warning, or after a brief but powerful artillery preparation. Accompanying weapons were about 400 to 500 yards behind the infantry. In all cases where tanks took part in the operation, the infantry advanced either in the intervals between the tanks or behind them. Combat engineers also advanced with the infantry in order to be able to cut openings through the obstacles for them.

The artillery acted in conformity with the attack orders, supporting the advance of the group, repelling enemy counterattacks, and covering the flanks of the attack.

The second factor of major importance was the problem of orientation and maintenance of fixed direction during a night attack. During the rehearsal for the attack, formation commanders gave the greatest attention to this matter and carefully studied the terrain. In order to lighten the task of the unit commanders, specially trained noncommissioned officers, one or two per company, who were to act as scouts, were placed with the command groups of the companies. These scouts were capable of following a given direction and led the formations to their objectives.

#### **Operations Against Ionachtal**

This operation took place during the

pursuit of the Germans, and was characterized by an encircling maneuver at night, which led to the annihilation of a numerically superior enemy force.

On 23 October, units of a Guard division, operating in the break-through area, after seizing possession of the second line of defense, took the offensive.

In the division's zone of action, the most serious obstacle appeared to be Ionachtal, which was strongly organized. Two lines of continuous trenches, together with barbed wire obstacles, surrounded the city. Three lines had been organized on the east side of the city. The strong point was connected with Hill 52 by trenches and had fire support from adjoining strong points.

The enemy garrison consisted of two infantry battalions, a heavy weapons company, and had an artillery group at its disposal. Half of the artillery's guns occupied open firing positions permitting direct fire.

Ionachtal was a formidable strong point. An attempt to take the city in daylight resulted in failure. In the meantime, Soviet units occupied positions which prevented the Germans from bringing up reserves or establishing a continuous defense on the intermediate line.

In order to take all known factors into account, the regimental commander made the following decisions:

1. To encircle the garrison with strong points and annihilate it by means of a flank attack.
2. To make the main effort against the northwest section of Ionachtal and a secondary attack against the southwest.
3. To have a diversionary frontal attack made on the east by one infantry company, in order to draw the enemy's attention away from the units making the main and secondary efforts.

The regional staff worked out a night attack plan which was fundamentally simple, but which prescribed, in great detail, the actions of the various units.

Because the regiment had to fight under bad weather conditions, the staff had fixed, in the attack order, the azimuth of the direction for each unit, and had prescribed the placing of scouts in front, in order to permit the battalion and company commanders to remain in their respective attack zones. Intermediate boundaries were also fixed.

Fire was to be opened only on the order of the battalion commanders, and only if the enemy discovered the movement of the units and opened fire on them. The signal for opening fire with mortars and artillery was a red rocket fired in the direction of the objective.

In addition to the information concerning missions and forces available, the attack order contained a directive relative to the employment of automatic weapons. Each battalion was ordered to use the combat engineer groups charged with the removal of obstacles. Unit commanders also were ordered to follow a specific route, to pass the intermediate points at the prescribed moment, and to observe instructions accurately in case of an enemy counter-attack.

At 1600 on 24 October, after reconnaissance by officers, the regimental commander gave instructions for establishing liaison between the attacking and supporting units. In addition, the action of the regiment was co-ordinated with that of the neighboring formations, which had the mission of seizing possession of the strong points of Baiograllen and Iodjla-Uken, east and west of Ionachtal.

At 2100, after a thorough reconnaissance, units of the regiment began the attack without artillery preparation. The Germans sent up flares and fired repeated bursts of mortar and machine-gun fire. Keeping themselves out of the enemy's view, the 1st and 3d Battalions came out onto the road about 400 yards northeast of Ionachtal. Under cover of darkness, the 1st Battalion, moved to the southwest sec-



tion of the city. There it was sighted by the Germans and taken under fire by their machine guns. The enemy soon moved his infantry from the east and southeast part of the city and executed a counterattack against the 1st Battalion.

Taking advantage of the Germans' lack of prudence, and of a lull in the fighting, the 3d Battalion rapidly covered the open terrain and forced the southwest approaches of Ionachtal, where house-to-house fighting began.

At this moment, when the 1st Battalion had repulsed the enemy counterattack, the 2d Battalion attacked the north approaches and, at dawn, the 3d Battalion went into action west of the city. In order to repulse the 2d and 3d Battalions, the enemy counterattacked with all his forces, leaving only a covering force opposite the 1st Battalion. But the Germans were unable to restore the situation.

After the 2d and 3d Battalions had stopped the German counterattack, the 1st Battalion began the attack again and seized possession of the southwest extremities of the position. At 1000 on 25 October, the 1st Battalion with the 3d Battalion, encircled the enemy.

During the day, the regiment began mopping-up operations and, by evening, completed the destruction of the entire garrison.

#### Operations Against Plessien

A division of Guard Infantry had not been able to capture Plessien in daylight action, so it was decided to launch a night attack.

Two companies were designated for the operation. Each of them was given two machine guns, two 76-mm guns, and a platoon of combat engineers. In addition, one artillery group supported each of these companies.

On the night of the attack, the units moved up to their jump-off position, about 150 to 200 yards from the enemy. After a 10-minute artillery preparation, the attacking units penetrated the south and east sides of the city and hand-to-hand fighting began.


The surprised enemy force opened fire in a disorderly manner. But within a short time the attacking units had control and had occupied the city.

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The basic principles of military operations tend to remain constant. It is the means of applying these principles which vary sharply under varying conditions.

*Officers' Call*

## The Brazilian Navy in World War II

 Digested by the MILITARY REVIEW from an article by Homer C. Votaw in the "United States Naval Institute Proceedings" May 1950.

MUCH of the spontaneous welcome everywhere given President Dutra of Brazil during his last visit to the United States was obviously motivated by a general appreciation of his country's part in the recent world fight for freedom. Because of Hitler's plans for Africa, most of us had been greatly relieved when Brazil placed her very strategic air and naval bases at our disposal. And long before that, materials from her industries and vast natural resources were being routed into anti-Axis arsenals. Later on, favorable firsthand impressions came from our men in Italy who made personal contacts with the Brazilians fighting there; while our air and naval personnel in the Caribbean and South Atlantic often worked side by side with Brazil's, to pronounce them serious workers and "regular guys." Now and then, too, our public read censored dispatches concerning other Brazilian war activity, and so knew that a sizable job was being done by that nation in all fields.

However, in spite of laudatory comments from the late President Roosevelt, Winston Churchill, President Truman, high admirals, and others in a position to know, not many of us are yet familiar with the important part the Brazilian Navy played in the over-all war picture. In fact, many Brazilians themselves are still unaware of it. This is the result of strict wartime censorship, the assumed task's usually monotonous routine, and the modesty of the Brazilian naval personnel. Yet without such wholehearted and laborious support, the dates of many important victories would have occurred much later than they did.

### Wartime Expansion

Like most countries, Brazil was at first naturally confused by the prewar appease-

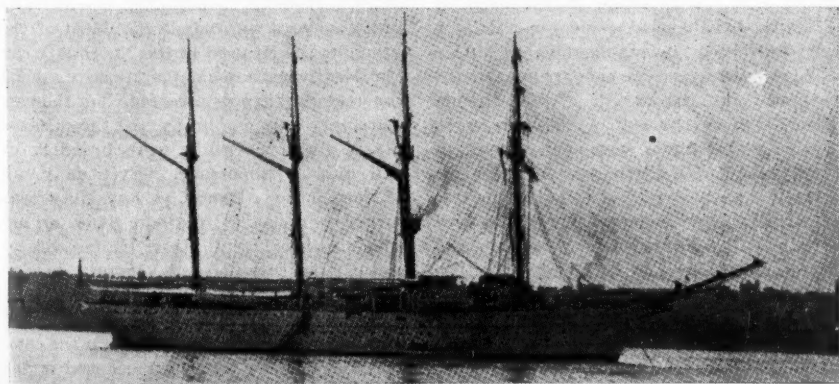
ment attitude of the European democracies. And to further complicate her local problem was the well-organized Nazi group among her large Germanic population. There were also many Italian and Japanese-blooded citizens of Brazil sympathetic to the Axis cause. Nevertheless, even before committing herself officially, Brazil's eventual direction of action loomed up clearly, particularly in the case of naval activity.

Intensified preparations began with the outbreak of fighting in Europe. The first step was the patrol of Brazilian coasts, and the expansion of naval technical abilities. Her fleet at that time consisted of 2 dreadnaught-type battleships; 2 light cruisers; 10 destroyers (not all completed); 3 submarines; 12 corvettes; and 10 auxiliary, mine, and river vessels. Additional craft were being completed abroad, but these were taken over by the various countries for their own use.

Brazil's merchant marine was sizable—305 vessels totaling 487,000 tons, which was increased to 652,000 tons before the end of 1941. Because many of these ships were carrying supplies destined for the democratic countries of Europe, vicious, indiscriminate Axis attacks by submarine and air began as early as March 1941. These increased sharply, after Brazil severed Axis relations following the Pearl Harbor attack upon the United States. It was evidently realized by Germany that the recently signed American Defense Pact, Brazil's traditional friendship with the United States, and her sympathy with the democratic cause were but indications of her coming declaration of war, which occurred in August 1942. Nevertheless, the two nations were officially at peace until then, so the indiscriminate sinking of



The Brazilian Army and Navy made valuable contributions to the Allied war effort during World War II. Above, members of the Brazilian Expeditionary Force on board a US troop transport bound for Italy. Below, the Brazilian naval school-ship *Almirante Saldanha*, used for training young officers of the Brazilian Navy.



Brazilian ships, particularly in their own waters, was against the rules of war and decency. Besides small craft, 16 large vessels were brazenly torpedoed without warning that year previous to the declaration, some resulting in a heavy loss of life. One of these latter was a Brazilian transport carrying 700 soldiers between two Brazilian ports. Later on, passengers were machine-gunned in the lifeboats, as in the case of the *Itapagé* which sank in 4 minutes.

Brazil's generally peaceful history—she gained her independence through evolution rather than revolution—probably had much to do with the degree of patriotic fervor that arose following her well-justified war declaration. Upon the call for specialists, for example, professional men even camped for 3 days in the streets of Rio de Janeiro waiting their turn to be signed-up and processed. A newspaper editorial summed up the general attitude in the statement, "We are in this war for liberty by the side of our American brothers as a great force dedicated to the defense of justice."

Naval priority was at first given to the rushing of more troops and supplies to the new mainland and island bases along the northeast coast that bulged out toward Africa. This not only reduced the menace from a possible victory by Rommel over there, but also ensured the failure of any co-ordinated local action in the area by Brazil's Axis-blooded residents. It likewise prevented the establishment of hidden U-boat bases, such as one previously discovered near the mouth of the Gurupi River. Before the end of the year, even United States forces were operating at, or from, many of these bases. And for the sake of combat unity, the northern force of Brazil's Navy was voluntarily merged into the Allied Fourth Fleet. The principal base was at Recife, but numerous other ports helped out considerably. Brazil's southern force, although smaller, also had a tremendous convoy and patrol job. It was based at Rio de Janeiro, where United

States vessels happening through that area were sometimes serviced.

### United States Assistance

Lend-lease aid helped by the furnishing of equipment, supplies, capital, and technical knowledge for both combat and industrial use. By mid-1945, more than \$154,000,000 had been utilized under the plan, with much important raw material and finished products being sent to the United States in return by Brazil. Brazilian naval officers and men were sent up here for instruction regarding the latest naval weapons and combat methods, and Brazilian vessels were outfitted with the best in antisubmarine devices. Eight destroyer escorts were permanently transferred by the United States to the Brazilian flag, along with eight submarine-chasers, eight motor patrol-chasers, the transport *Orzabo*, and eventually, other small craft. The naval shipyard at Rio de Janeiro was enlarged, and besides completing the 1940 class of Brazilian destroyers, it constructed three of our *Fletcher* class from plans and much material furnished by the United States.

Although Brazil had over 4,000 miles of her own coast line to guard, nevertheless on 18 January 1943, her war vessels extended their convoy duty another 1,500 miles northward to Trinidad, where many great convoys were made up. Most of the gasoline and oil used in the North African and Mediterranean campaigns were among the valuable cargoes escorted. Yet the raw materials coming north to the United States from the south were probably of still greater importance. Eventually, all of the South Atlantic convoy duty was turned over to the Brazilian Navy, an act which relieved still other United States and British vessels for urgently needed service elsewhere.

Submarine attacks continued until even after the German capitulation, but the comparatively heavy losses experienced in the

area early in the War were largely eliminated. The Brazilian Navy, alone, and in conjunction with the United States Navy guarded 3,167 ships in 614 convoys, totaling 16,500,000 tons—and this with a loss of not one-tenth of one percent!

To further illustrate the importance of the task, here is the national distribution of the tonnage covered:

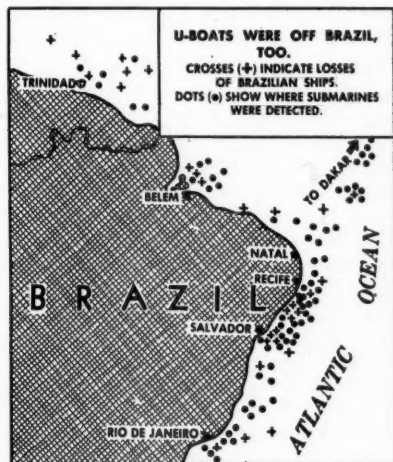
Ship Nationality	Tonnage
American	6,884,823
Brazilian	6,138,506
British	1,618,299
Panamanian	933,082
Norwegian	301,500
Swedish	233,008
Dutch	140,588
Lithuanian	77,360
Belgian	73,976
Greek	27,793
Yugoslavian	16,601
Polish	6,606
Egyptian	3,969
Uruguayan	3,268
Peruvian	2,768

Little rest was allowed. Some Brazilian warships made 77 convoy trips, many over 60, and even the small submarine-chasers over 40. In addition, several destroyers twice escorted United States transports that carried the Brazilian Expeditionary Force to the Mediterranean. And as usual, the life was grueling and laborious, particularly in bad weather. It was only luck and good seamanship that kept other small vessels from being capsized and lost in storms, as was the unfortunate little corvette *Camaqua* on 21 July 1944.

The Brazilian Navy Department reports that their vessels alone had 38 separate contacts with U-boats in 1943 (a contact being anything from a propeller sound to a torpedo attack), 14 in 1944, and 24 in 1945. The air forces did much to keep the number down, of course, but some credit for their work must in turn be given to the Brazilian Navy, for supplying those bases from which the planes operated. The accompanying map shows the locations of these contacts as well as the spots where Brazilian ships were sunk off South America. It well illustrates the fact that Brazil was far from being "on the side lines" during the conflict. She had ship

losses in other areas, too, with four of them being off New York, and one even in the Normandy landing. Her naval warfare death list totals over 500 men.

Although but three warships and one auxiliary went down, one of them tops



Brazilian naval tragedies. This was the cruiser *Bahia*, blown up 5 July 1945, nearly 2 months after Germany surrendered. Although the cause may well have been a floating mine, the area was one frequented by German submarines; in fact, one turned up in Argentina 2 days later. Moreover the Brazilian destroyer *Babitonga* reported sound contacts in the same location a few days later, and after making six attacks with "mouse trap" and depth bombs reported that a dark object identified by some as a metal hull came to the surface momentarily, to be followed by air bubbles and a large slick. Of the 375 persons aboard the *Bahia*, over half (including four United States naval technicians) were lost. Many of the survivors were fortunate enough to be picked up from rafts after days of tropic exposure so rigorous that many of their comrades had jumped overboard to welcome death by drowning.

At the time, like most Brazilian vessels,

the *Bahia* was on duty as part of the long line of beacon and rescue ships aiding the great airlift of United States troops from Europe, most of whom were destined for the War in the Pacific against Japan. This added naval activity had released over 25 more United States and British vessels for combat duty in the big "wind-up."

In commenting upon the work of the Brazilian Navy, the United States Atlantic Fleet Commander, Admiral J. H. Ingram, who followed it very closely, said, "Brazil did nobly, and her help as an ally stands out in Brazilian-American relations." He placed particular emphasis upon the exceptionally ready manner in which officers and personnel had undertaken every job during the War, no matter how much disagreeable labor was entailed; and, he added, that even the Brazilian press had not given sufficient recognition to the large task that had been so commendably accomplished. Other favorable comments by American and British national leaders are a matter of common record.

Being the largest, richest, and most populous country in South America, as well as having so many combat-experienced men, Brazil could easily have obtained a position of overwhelming fighting power in South America after the War. However, she is by nature and tradition one of the world's best neighbors, and so is content to maintain comparatively modest forces, with emphasis upon training.

### Naval Service

Naval training is exceptionally thorough, and naval service is looked upon as a lifetime career. The officer training program consists of five steps, with admission based only upon certain moral, intellectual, and physical requirements. It begins with a year's general nautical course for all at the naval school. The candidates are then classified into the Naval Administration Corps, Marine Corps, or Naval (Line)

Corps, for an additional 1-, 2-, or 4-year course, respectively. Practical training included shipboard service for the Naval and Administration groups, with Marine duty service for the other. After graduating from the school the young officer (2d lieutenant, and then 1st lieutenant) is left alone for self-education during a definite period. In the auto-didactic stage, he studies textbooks while gaining practical experience, and is subject to periodic examinations. As lieutenant-captains, the Naval Corps men take a finishing course in armament, communication, hydrography, or machinery. Competitive examinations then admit some to the technical staff, and at a higher rank they attend the Naval War College.

The lower ratings usually come up from naval recruits sent to the naval apprenticeship schools. After a year there, they join the Fleet as deckhands or cabin boys (*Grumetes*). Combined experience and textbook study follows, before the *Cabo*, or petty officer, stage is reached. Then comes the petty officers' finishing school which graduates the successful into 3d naval sergeants. Further study and competitive examinations bring a warrant officership to some.

Of late, it has been the practice of the Brazilian officer training vessel, *Almirante Saldanha*, to visit the United States east and west coasts upon alternate years. This vessel was especially built for training purposes by Vickers Armstrong in England. She is large for a sailing vessel, being 307 feet long, and of 3,400 tons, with an exceptionally high freeboard. Auxiliary Diesel engines provide 1,400 horsepower, but she sometimes makes from 12 to 14 knots under sail alone. Her training armament ranges from a torpedo tube to five types of guns. Besides a complement of 356 officers and men, including 31 spic-and-span red-coated Marines, she usually carries about 60 midshipmen.



## The Military Background of Britain, The United States, and Russia

Digested by the MILITARY REVIEW from an article by Major  
S. J. Watson in "The Army Quarterly" (Great Britain) April 1950.

### Great Britain

Utterly unwarlike, they outlast everybody else when war comes.—American Ambassador in London, 1916.

BRITAIN'S traditional strategy dates from the discovery of the New World, when the economic and political axis of Europe shifted to the Atlantic coastline. Geographically, she was then at the center of gravity of the civilized world.

For the next 400 years, Britain's strength lay in her sea power, which enabled her to:

1. Exert economic pressure against her rivals by piracy and blockade.
2. Colonize an overseas empire.
3. Preserve her island as a firm base secure from invasion.
4. Transport and maintain her armies in overseas theaters of war, and switch them at will to diversionary operations elsewhere.

Unlike continental powers, whose long land frontiers called for large and often cumbersome land forces to defend them, Britain kept her army small and flexible. By itself, this force had no pretensions of rivaling continental armies by weight of numbers, but aimed rather at swaying the balance of power to the side of Britain's chosen allies by the use of mobility and surprise. Through sea power, Britain was assured of the over-all initiative, since any tactical defeats on land were sure to be redressed by the fleet's strategic pressure against the economy of her enemies.

There was thus engendered a confidence in ultimate victory which has enabled the British soldier to:

1. Sustain setbacks and hardships with a peculiar equanimity and sense of humor.
2. Refuse obstinately to envisage the consequences of defeat.

3. Outlast his enemies by sheer tenacity of purpose.

Britain is, by tradition, an unmilitary nation, as war came to be regarded not as a struggle for survival, but rather as a science which offered all the excitement of fox-hunting and only 75 percent more of the danger. This attitude perhaps explains:

1. Britain's emphasis on the "rules of the game" as promulgated by the Hague Convention.
2. The Englishman's humane regard for the lives and welfare of his own soldiers, and reluctance to foster personal enmity towards his enemies.
3. The eagerness for demilitarization, once war is over.
4. The unpopularity of conscription in peacetime, though it is cheerfully accepted as a wartime necessity.

Such sentiments appear strange in modern war against totalitarian states. They were more appropriate to the role of policing the Empire.

Imperial policing has, from the time of the East India Company, enabled Britain to combine in a worthy and constructive cause:

1. The training of her leaders and the exercise of her soldiers.
2. Long experience of overseas campaigns in varying climates.
3. Knowledge of conducting seaborne operations.

But the very success of these expeditions has probably led to undue conservatism in military development. It is only after exhaustive trials and prolonged deliberation, that new weapons or new techniques in war are finally adopted. There is thus a danger that some foreign power may,

meanwhile, have put the same ideas into practice on a formidable scale.

Another deterrent to military development is the need for economy. In striking the balance between the two extremes of having an industry with no fighting services to defend it, or having fighting services with nothing worth defending, the following factors weigh against the British armed forces:

1. Improverished by the wholesale contribution of industry to the last War, Britain must now concentrate on the return to peacetime production in order to get overseas markets for her goods.

2. The cost of the armed forces, including their allocation of manpower and industrial resources, is an insurance premium which in peacetime the average citizen is loath to pay.

3. Because the votes of the peacetime forces are unlikely to sway election results, politicians in a democratic country often pay undue attention to the more popular peacetime suggestions of disarmament and appeasement.

Britain has entered the last two Wars with inadequate, under-equipped fighting services, and it has taken many months to convert peacetime industry to wartime needs. The equipping of these services, therefore, presents a most difficult problem to the planning staffs, since they are seldom sure where they stand in regard to public opinion, and, in a democracy, public opinion elects the government which controls the purse strings.

Britain is not self-supporting. The Empire has hitherto provided, in whole or in part:

1. Raw materials from which are manufactured the equipment economically necessary in peacetime, and the weapons militarily vital in war.

2. Foodstuffs which British agriculture does not produce in quantities sufficient to support the population.

3. Oil, which, with the development of the internal combustion engine, has become more vital to Britain than her native coal.

The delivery of these commodities depends on Britain's ability to keep open her lines of communication with the Empire.

The problem of Empire security is complex. The Empire is widely dispersed, but largely lacks the industrial capacity to equip its armed forces and is open to defeat in detail. Britain, however, has so concentrated her industry and population as to present a most vulnerable target to weapons of mass destruction. No equivalent problem confronts either the United States or Russia. Each dominion of the Empire has its own policy, and these various policies may not favor a prearranged defense scheme or a centralized defense organization. No dominion is bound to enter a war in which Britain is engaged, still less to dispose its military forces in accordance with the wishes of Whitehall. No such latitude is desired by any of the states of America, nor is it likely to be granted to any member of the Union of Soviet Socialist Republics.

As Cyril Falls has written in "The Question of Defense": "Russia is strategically interested in Rumania, not for the sake of Rumania but because she looks upon that country as a buffer state or outpost of her own. . . . But into England's relations with New Zealand there enters another element, far from purely strategic. Britain desires to provide security for New Zealand for its own sake; New Zealand is part of the Empire."

### United States

Our country has become so democratic that the mere popular opinion of any town or village runs above the law.—General Sherman.

The United States is a young nation, founded by European peoples fleeing from seventeenth-century tyranny and persecutions, which is specifically—and uniquely—dedicated to the proposition that all men are created equal. Separated from Europe

and Asia by thousands of miles of ocean, the Government has always had the time to frame its policies on the basis of argued reasoning within the framework of a written constitution. Thus, historical tradition has evolved the theory of democracy, and geographical position has enabled this theory to be put into practice.

Like Britain, the United States is not a military nation. The two main reasons are:

1. Geographic isolation, together with economic self-sufficiency, have hitherto dispensed with the need for formulating an international strategy. The young American nation is, as a whole, more likely to react to an affront to national dignity than to a threat to national security.

2. The regular armed forces have never fought to bring wealth or empire to the nation, nor before 1941, did they stand between the nation and unconditional defeat. In the eyes of a young democracy, accustomed to judge by results, the glamor of West Point has taken second place to the glamor of Wall Street.

This outlook does not favor an aggressive military policy or conscription in peacetime; nor is the rigid Constitution suited to deploy the nation quickly for war.

American military traditions do not go back beyond the Civil War, which took place within living memory. But from that remarkable campaign, at the start of which soldiers fought with muzzle-loading muskets and generals returned to the colors from civilian life, emerge four basic lessons:

1. The importance of what Liddell Hart calls the "indirect approach" by mobile forces, vindicated by:

- a. Grant's thrust against the enemy lines of communication at Vicksburg.

- b. Sherman's operations against Confederate industry and communications on his "march to the sea."

2. The vital influence of logistics on strategy, demonstrated by Haupt and

MacCallum—the founders of "movements and transportation."

3. The need for a mutual understanding between the politicians and the commanders—emphasized all too late by Jackson's resignation.

4. The increased efficiency achieved by decentralization to subordinate commanders. One of Grant's directives to Sherman reads: "I do not propose to lay down for you a plan of campaign, but simply to lay down the work it is desirable to have done, and leave you to execute it in your own way."

All these lessons are equally applicable today, and an army with traditions founded on this teaching is fundamentally sound in its approach to the problems of modern war.

The United States is a self-sufficing land mass enjoying the following advantages:

1. Rich natural resources (though, like Russia, the United States looks to the Middle East for supplementary oil supplies).

2. An agriculture which can support the population.

3. A population which could support strong armed forces in peacetime without serious dislocation of the national economy.

4. A comprehensive system of road and rail communications.

5. An industrial potential which:

- a. Is undamaged by wartime enemy action.

- b. Was never completely converted to wartime production.

- c. Does not offer such concentrated targets as the industrial centers of England.

Not only can the United States afford to have her armed forces fully equipped before the next war starts, but any inferior or obsolescent items of equipment could be replaced quickly. The only military disadvantage of American labor-saving and mass-production methods is that the average soldier may become too "gad-get minded" and find difficulty in improvising, if deprived of mechanical aids.

As compared with an Englishman, an American shows only a few, but significant, differences:

1. He is emotionally more volatile, due to:

a. The mixture of races from which he is recently descended.

b. His higher nervous tension, resulting from the faster tempo of American daily life.

2. He is more likely to regard his war-time enemies as personal enemies, due to the influence of the personal—and often unscrupulous—rivalries in American “big business.”

3. As a citizen of a young nation, he is likely to prefer to make his own mistakes and to learn from them, rather than to accept advice based on other people’s experience.

Unlike Britain, the United States has never experienced prolonged and heavy air attacks. It is known that the American soldier has fought bravely and competently while his family was safe, but it is not certain whether after the destruction of his home, his loyalty to his country will prove as strong as the more personal loyalty to his family. The Civil War showed that Sherman’s “march to the sea” set these loyalties in opposition, and thereby broke the wills of the fighting soldiers. Today it is possible that the American soldier might be unbalanced, at least temporarily, by heavy attacks against his homeland, coupled with insidious propaganda. The enemy will certainly try to exploit his advantage decisively before the Americans have time to regain their poise.

### Russia

Everybody has always underrated the Russians. They keep their own secrets alike from foe and friends.—Churchill, 23 April 1943.

Like the United States, Russia is inhabited by peoples of different racial origins who share a common citizenship. Russia’s national characteristics and military traditions have two main sources:

1. The Turko-Mongols from Asia, who swept into Europe in the twelfth century.

2. The true Russians from Eurasia who, from the fifteenth century onwards, pushed their way back into Asia.

These are the two predominant races among the 200 million inhabitants of the USSR today.

The Mongols are nomads, because of their constant search for pasturage in a territory which imposes few restrictions on mobility. They are also a warlike race, because their migrations have brought them into frequent conflict with other tribes and peoples. The true Russians have fought continuously for 500 years, pushing out the boundaries of their frontierless principality until they reached some line of natural defense. Operating on interior lines, whenever they were checked in one direction they could stop and try again elsewhere. Thus, the traditional policy of Russia follows this sequence:

1. Expansion on the following lines:

a. Geographical, to the next natural frontier.

b. Racial, through the Pan-Slav movement.

c. Ideological, by means of the Comintern.

2. A check, for example, from German land power or from Japanese sea power.

3. A change of direction or of policy, as when Molotov made the pact with Germany on 24 August 1939.

Long years of war have bred in the Russians a profound distrust of their neighbors, particularly of those whose superior standard of living and industrial tradition appear as a constant menace to Russia’s more primitive organizations. The Russians are a warlike and not an industrial race. All Russians readily accept the teaching that it was the Red Army which saved their country, and, at the same time, won the War for the English and Americans; it is, therefore, an honor to be a soldier.

History and environment give the Rus-

sian soldier the following characteristics:

1. Self-reliance and resourcefulness in improvisation.
2. A standard of fieldcraft, by night especially, which is far superior to that of British and American townsmen.
3. Physical toughness and bravery, which enable him to survive the worst conditions of battle and climate with the minimum of food, clothing, and shelter.
4. Ready acceptance of death both for himself and his enemies, for whom he is taught to foster a ruthless and personal hatred undiluted by Christian scruples.
5. An over-all patriotism and loyalty to Stalin reaching religious fervor.
6. A lack of experience of overseas operations.

Russia has no convenient antitank obstacle like the Atlantic Ocean or the English Channel, and has, therefore, no time to formulate policy, on democratic lines, in the face of real or supposed aggression. The Russians are used to authoritarian government backed by secret police. The Czars and the *Okhranka* (secret police in Czarist Russia) found it necessary to adopt this form of government because the people had no education; the Politburo and the MVD find it necessary to continue this dictatorship to ensure that the people's education follows the "party line." The government of the State and the command of the armed forces are therefore rigidly centralized and carefully screened at all levels by the MVD. Local initiative is neither trusted nor encouraged.

Thus, the keynote of military discipline is the unquestioning obedience of orders, even though subordinates are seldom briefed sufficiently to understand the reason for any particular incident in a campaign. Officers display a high standard of leadership, but the low level of their education does not fit them easily for the intricacies of staff work and administration.

Russia resembles the United States in the following:

1. Russia is a self-supporting land mass, rich in natural resources.
2. Russia's agriculture can support the population.
3. Russia's industrial centers are widely dispersed and not as vulnerable as those in England.
4. Russia's industrial potential is capable of equipping the present armed forces to 1945 scales.

Russia differs from the United States and Britain in that:

1. Russia has no industrial tradition and lacks trained technicians.
2. Russia's present road and rail communications are not adequate to link industrial output with the armed forces deployed for war. In Russia, there are only 0.7 miles of railway per 100 square miles of territory, compared with 8.3 miles in the United States and 21.5 miles in Great Britain.

Like Britain, Russia's factories and communications were extensively damaged during the last War, though the effect of this was reduced by transferring the main industries to beyond the Urals and by importing lend-lease and satellite plants and machinery.

Unlike Britain or America, Russia appears to show little interest in overseas markets. The Government is able at any time to allocate industrial resources to the armed forces, and to ensure that the people accept any consequent shortage of consumer goods.

During the next 10 years, the strategic policy in Russian industry is likely to aim at:

1. The build-up of a reserve of warlike equipment sufficient to cover the general mobilization of the Red Army.
2. The extension and improvement of road and rail communications linking industrial centers with probable zones of operations.

3. The training of competent technicians, particularly in radar and nuclear physics.

Meanwhile, the Russians will concentrate on:

1. Servicability of equipment achieved

through standardization of design and simplicity of construction.

2. Improvisation, based on ruthless exploitation of local resources and the manual dexterity of the Russian soldier.

## The Battle of the Mareth Line

*Digested by the MILITARY REVIEW from an article by Major O. D. Jackson in the "Australian Army Journal" December-January 1949-1950.*

### The Mareth Line

THE original defenses of the Mareth Line were constructed by the French to protect Tunisia against Italian attack from Libya. In March 1943, the main defenses were some 22 miles long from the sea near Zarat to the rugged Matmata Hills in the southwest, and included concrete and steel pill-boxes and gun emplacements, tank obstacles, wire, and mine fields. The main defenses were also protected by a series of skillfully sited covering positions.

The defenses were held by about three divisions of Italians, together with the 90th Light Division (German) in the center and the 164th Division (German) in the hills on the southwest flank. The 15th and 21st Panzer Divisions (German) were held in reserve.

### Possibilities of Outflanking

The designers of the Mareth Line apparently had considered that it was impossible to outflank it to the west of the Matmata Hills. The going was very difficult, and any such operation would involve a movement of at least 150 miles over waterless desert to reach the switch line sited to protect El Hamma from the southwest.

It was said that the French had conducted an exercise to prove this theory, but in view of the availability of vastly superior transport, General Montgomery was not prepared to accept it. While the prep-

arations for the battle continued, the Long Range Desert Group (British) was sent to reconnoiter the area and reported that it would be difficult but not impossible to outflank the Mareth Line.

### Eighth Army Plan

First, the XXX Corps (British) was to break through the covering positions and close up to the main defenses. It was hoped that these preliminary operations would mislead Rommel as to the direction of the main thrust. It was then planned to begin the main operation about 20 March, by which time the administrative organization would be able to support the offensive and X Corps (British) would be concentrated in the forward areas.

The Army plan included these four main features:

1. XXX Corps was to attack the Italians holding the coastal sector of the main defenses.

2. A force designated the New Zealand Corps (2d New Zealand Division, 8th Armored Brigade, and General Leclerc's force) was to advance around the western flank and break in behind the Matmata feature.

3. X Corps (1st and 10th Armored Divisions, and the 4th Light Armored Brigade) was to be held centrally in reserve, ready to exploit success and tackle the Gabes bottleneck.



4. The operation was to be supported by the full weight of the available Allied Air Forces.

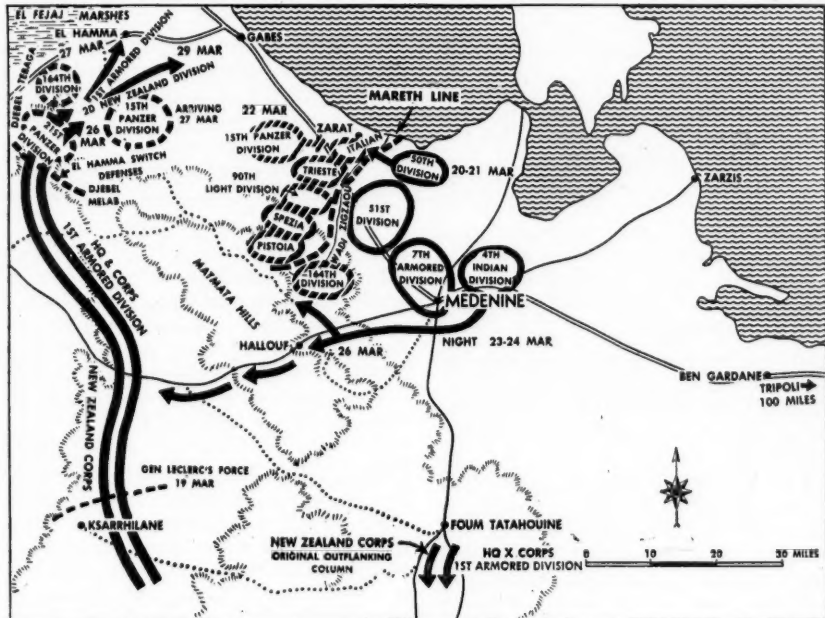
### Preliminary Operations

On the western flank, General Leclerc's force was causing Rommel a great deal

tempo of their operations to prevent Axis reserves, including the 10th Panzer Division (German), being moved to the Mareth Line.

## Battle of the Mareth Line

The New Zealand Corps began its ad-



of anxiety, and on 10 March, armored cars, artillery, and aircraft made an attempt to destroy it. With the assistance of the Desert Air Force (British), the French stood firm, inflicted heavy casualties, and prevented the enemy from reconnoitering towards the New Zealand Corps' concentration area near Fom Tatahouine.

By 15 March, XXX Corps had closed up to the main defenses, and the New Zealand Corps, its concentration completed, was lying concealed ready to begin its long advance. At the same time, the American forces in western Tunisia increased the

vance during the night 19-20 March and pressed forward throughout the following day. At last light, the force was only a few miles short of the bottleneck between the Djebel Tebaga and Djebel Melab where the Axis switch line was sited.

Preceded by a tremendous artillery barrage, the 50th Division (British) began its attack at 2230 the same day (20 March). The attack penetrated to the Wadi Zigzaou, where several strongpoints on the far bank were taken. The XXX Corps had gained a foothold in the Mareth defenses.

On 21 March, the gains were held, and during the next night the break-through

area was widened and deepened. German reserves were now beginning to arrive, and the fighting increased in intensity.

The next day heavy rain fell and the task of constructing crossings over the Wadi for tanks and supporting weapons became more difficult. During the morning, the rain prevented the Desert Air Force from taking off to attack the 15th Panzer Division which, together with a brigade of the 90th Light Division, was concentrating for a counterattack.

In the afternoon, the German blow fell. As satisfactory crossings over the Wadi had still not been established, the forward elements of 50th Division were without adequate tank and antitank support, and were unable to withstand the German armored attack. Much of the ground won after the initial break-through was recaptured by the enemy.

Rommel had now committed his reserves to the coastal sector, and it was obvious that any attempt to renew the 50th Division thrust would result in severe casualties. It was also known that the 164th Division had moved from its position at the western end of the Mareth Line to oppose the New Zealand Corps' advance. Immediately, General Montgomery decided to stop the coastal attack and merely attempt to pin the enemy in that sector, to launch new thrusts through the center, and drive home the outflanking attack before Rommel could move his reserves across to oppose it.

Accordingly, during the night 23-24 March:

1. The 50th Division withdrew from the far bank of the Wadi Zigzaou.

2. The 4th Indian Division advanced from Medenine towards Hallouf. This attack was planned to open the lateral route between the two original thrust lines and facilitate both maintenance and the switching of forces from one side of the battle area to the other. There was also the possibility that the 7th Armored Division

(British) might follow up and deliver "a short hook" around the Mareth Line.

3. Headquarters X Corps and the 1st Armored Division (British) advanced to join the New Zealand Corps.

The New Zealanders were still held up in front of the 6,000 yard defile by Italian forces, now reinforced by the 21st Panzer Division and the 164th Division. The task confronting the British forces was to break through this heavily defended bottleneck with all possible speed, and launch the armored forces into the more open country beyond.

### The Djebel Tebaga

The possibility of outflanking the Djebel Tebaga was discarded, since any such movement would place a complete obstacle between the attacking forces and make mutual support impossible. The only solution was to make full use of the tremendous Allied air power, and subject the Axis forces to such concentrated and continuous air attack as to weaken their ability to withstand a full-scale land offensive.

The Axis positions were to be heavily bombed during the night of 25-26 March, and the attacks continued in daylight to reach maximum intensity about 1500. Heavy artillery concentrations were to be laid down for a further hour, and, at 1600, the New Zealand Corps, with the sun directly behind them, would lead the attack. The infantry and tanks were to be supported by continuous attacks by relays of fighter bombers operating ahead of the artillery concentrations.

After the heavy air and artillery attacks, the New Zealand Corps began its advance on 26 March. The initial assault broke into the defenses, and the 1st Armored Division followed to penetrate a further 6,000 yards. By this time, it was dark, and the Division was forced to halt. When the moon rose, the attack was continued and, amid the noise and confusion, the 1st Armored Division passed straight through the enemy, including the entire 21st Panzer Division.



These pictures were taken just east of Mareth, Tunisia, on 29 March 1943, only a day after the British Eighth Army had broken the Mareth Line and the Axis forces withdrew toward Gabes. The Battle of the Mareth Line was the Eighth Army's toughest fight in Africa since El Alamein. Above, infantry vehicles of the British 50th Division are shown moving toward the north. Right, the crew of a British command tank awaits orders before continuing the pursuit. Below, British engineers preparing to sweep an area for mines before occupying a motor park. At Mareth, British retention of the initiative prevented Rommel from concentrating his armored forces.—US Army photos.



sion. By dawn the next day, the leading tanks were operating only a few miles short of El Hamma, where they ran into a strong antitank screen.

The Axis forces were now trapped between the 1st Armored Division to the west, and the New Zealand Corps to the east. The Germans fought desperately. The New Zealanders were engaged in severe fighting to clear the battlefield, while the 1st Armored Division withstood two attempts by the 21st Panzer Division to break out. By evening 27 March, the Axis defeat was complete, and the 1st Armored Division advanced on El Hamma, while the New Zealand Corps moved directly on Gabes.

Meanwhile, on the XXX Corps front, feint attacks had been launched, and the 7th Armored Division had moved up close behind the line to increase enemy anxiety. The 4th Indian Division had made good progress and opened the lateral road as planned.

During the night of 27-28 March, the Axis forces in the Mareth Line proper withdrew towards Gabes. The XXX Corps began to follow them at first light but was confronted by the usual difficulties of mines, booby traps, and demolitions, while on the other flank the X Corps was delayed by dust storms near El Hamma. Thus, the Axis forces were able to escape before the Gabes—El Hamma gap could be closed.

#### Comments on the Battle

The Battle of the Mareth Line had been the Eighth Army's toughest fight since El Alamein. Rommel's armored forces had again received a tremendous hammering, and the 164th Division had suffered heavily both in men and equipment.

Perhaps the most outstanding feature of the battle was the striking power of the air forces in support of ground operations. Once again, the essence of success had been the intimate co-operation both in planning and in fighting. New methods of control

had been used, and for the first time, Royal Air Force officers had observed the fighting from forward observation posts and maintained wireless contact to supply battle information to the attacking aircraft overhead. This technique was also to become one of the highlights of the operations in Italy and western Europe. Again in this battle, British air superiority was virtually complete and enemy aircraft were unable to interfere with the operations.

A second important lesson is to be found in the retention of the initiative by General Montgomery in spite of the success of the 15th Panzer Division in its counterattacks against the 50th Division. The initiative was held by the immediate transfer of the main effort from the coast to the open flank. Rommel was unable to move the 15th Panzer Division and the 90th Light Division back to El Hamma in time to meet the new threat developed by the New Zealand Corps and X Corps.

Closely allied to the retention of the initiative by the Eighth Army was Rommel's failure to achieve any effective concentration of his armored forces. The 10th Panzer Division remained in western Tunisia, the 15th Panzer Division was committed on the coast early in the battle, and the 21st Panzer Division was used to support the switch defenses, southwest of El Hamma.

A fourth highlight is the speed and determination of the "left hook" operations. Effective reconnaissance by the Long Range Desert Group proved that the going was not impossible. Determination, close control, and a sound maintenance organization facilitated rapid movement. It was this mobility through extremely difficult country that enabled the Eighth Army to outmaneuver and outfight the Axis forces.

In the final phase of these operations, the timing of the New Zealand Corps attack on the switch defenses, followed by the 1st Armored Division's advance by

moonlight, achieved complete surprise, enabled the element of speed to be retained, and paved the way to success.

Once again Rommel had timed correctly the withdrawal of his forces from the main

defenses, while every stratagem was used to prevent an immediate follow-up and pursuit by XXX Corps. Fine judgment and control had enabled Rommel to extricate his main force from a dangerous situation.

## Defense and Offense

*Digested by the MILITARY REVIEW from an article by Air Marshal Sir Robert Saundby in the "Royal Air Force Quarterly" (Great Britain) April 1950.*

THERE are few military matters about which there has been more confusion than the terms "defense" and "offense." On the tactical level, there is not much difficulty, because the distinction, though perhaps not easy to define theoretically, is easy to recognize in practice. But on the strategic plane, it seems to be more difficult to separate the two phases.

I have met professional warriors who could not see that if Bomber Command were engaged in hunting and attacking submarines in aid of the Battle of the Atlantic it was acting defensively; but if it were attacking German war industries it was acting offensively.

So let us take this simple example, and briefly analyze it.

If Bomber Command were employed against German submarines, its object was to destroy them in order to safeguard our sea communications. The function of our sea communications was to enable us, first, to import essential food, raw materials, and oil fuel; and second, to supply our forces overseas.

But secure sea communications were a *sine qua non* of our existence, and not, from any point of view, a means of winning the War. In fact, if we had to devote all our resources to the achievement of security at sea, we should be committed to a wholly defensive attitude, and our eventual defeat would be certain.

Strategically, therefore, in the Battle of the Atlantic, Germany was on the offensive and we were on the defensive.

On the other hand, when Bomber Command was attacking German war industries and communications, it was attempting to destroy German capacity to make war. If it succeeded, the enemy's war material would be insufficient to support his offensive war plan, which would, therefore, fail. He would be compelled to devote a great part, perhaps almost the whole, of his air forces to the defense of his homeland. He would thus lose the initiative in the air and, consequently, also on land.

The strategic bombing campaign against Germany was, therefore, a powerful contribution towards winning the War; the Allies were on the offensive and the Germans on the defensive.

Now it is a cardinal principle of war that maximum force should be concentrated in the offensive, from which it follows that minimum force should be allocated to the defensive. It is in this connection, if in any, that the oft-quoted phrase "offense is the best form of defense" has any meaning. But the matter is by no means as simple as that.

Obedience to this principle in the past has led to an unreasoning distrust of the defensive attitude. In fact, a correct appreciation of when to stand on the defensive, if necessary with all your forces, and let the enemy wear himself out in the attack, and when to resume the offensive, is a great part of the art of generalship.

A classic example of this, because, owing to geographical conditions, it has been unchanging, is the traditional strategy of

Russia. When Russia is invaded, her object is to fight delaying actions, avoid encirclement, and withdraw into the vastness of her hinterland, and there, to bog down her enemy by the immense length of the front and of its communications. This Russia did in 1941-1942, standing on the defensive at three places only—before Leningrad, before Moscow, and before Stalingrad.

When the combined effect of huge distances, partisan interference with communications and, last but not least, the Allied strategic bombing campaign, had reduced Germany to the required degree, the Russians were able to resume the offensive. Germany was unable to withstand even a small degree of pressure at the front, and had to withdraw. Retreat increased her losses of material, and thus made her shortages even more acute. She, therefore, failed to reap the benefit of a shortened front and lines of communication, and was unable at any point to halt her retreat. She was forced on to a strategic defensive from which she had no hope of escape, and which ended in her defeat.

The moral is that if a defensive phase is chosen for good reasons, to bring about a situation in which it will be possible to resume the offensive with good hope of success, it is sound. Indeed, by conserving strength, it may well shorten the road to victory. If, however, it is forced upon a belligerent, as a result, for example, of the failure of an offensive, then it is bad, for it may prove impossible to bring the defensive phase to an end.

In the first case, the defensive attitude is deliberately chosen, and there is no loss of initiative. In the second, it is loss of the initiative which forces the belligerent to adopt the defensive.

### Losing the Initiative

What is fatal, therefore, is loss of the initiative, and not the adoption, for good reasons, of a defensive attitude. Note how

in the last War, when the Battle of Britain brought to an end the opening defensive phase, we seized and kept the initiative in the air.

As we shall never be the aggressor in any future war, we shall have to meet, at the outset, the shock of an attempt to destroy us by a sudden and overwhelming blow. All our resources, including our air striking force, will have to be concentrated on the task of breaking up the enemy's attacks upon us and our Allies, with the most punishing losses. If we can do this, the enemy will find that his offensive plan, on which he has staked so much, has failed and he is liable to falter, considering what next to do. Now is our opportunity to seize the initiative and change over to the offensive. There is a good chance that, once we have obtained the initiative, we can keep it, and, in due course, deploy our forces with those of our Allies for the grand offensive campaign which alone can lead to victory.

If this is true, should we not plan in peacetime in accordance with these ideas? We shall not be allowed to get away with another Norway or Dunkirk.

We are vulnerable in two ways to the knockout blow—quickly from the air, and more slowly by strangulation of our sea communications. We must, therefore, be ready for immediate defensive action in the air, including the operations of our air striking force. We must be able to organize the security of our sea communications within a reasonable time.

An expeditionary force on land is not required in the early stages, but will certainly be needed later as part of the final offensive campaign. In the first phase, however, I believe the role of the Army should be to support the air defense of this country. This it can do in three ways: by manning the anti-aircraft defenses, by guarding really vital points from airborne attack,



and by assisting the civil authorities, in a score of ways, to solve the problems created by large-scale air attack.

In a brief article such as this, I cannot

do more than give the outline of a few ideas, but perhaps I have said enough to stimulate thought on these very important questions of policy.

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As a result of World War II, and the subsequent changes in the balance of power that this War brought about, the United States finds itself in the position of being one of the primary targets in any new conflict.

*General J. Lawton Collins*

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The only way to peace and national security is through preparedness. We must come face to face with the truth about the kind of a war which might scourge the world in the future if we are not strong enough to keep it from breaking out. It would be total war—with every one of us, military and civilian alike, upon a “firing line” which would by no means, as in the past, be confined to a limited—distance—area of fighting.

*Lieutenant General Raymond S. McLain*

## Secret Forces and Sabotage in Maneuver

Translated and digested by the MILITARY REVIEW from an article in "Allgemeine Schweizerische Militärzeitschrift" (Switzerland) January 1950.

IN THE 1949 maneuvers held by the Allied Occupation Forces in Germany, the activities of secret forces were represented for the first time. The spying service, secret message communication service, sabotage operations, and commando undertakings, as well as defense against them, were practiced by both "Reds" and "Blues." In addition, the guarding of the maneuver area and the protection of the staffs and troops of both sides from actual agents and observers were carried out.

The decision of the Western Powers to include secret forces in the 1949 maneuvers arose from the desire to familiarize both the command and the troops with such operations, and to provide practical training in all three fields of the secret forces—the collection of information, counter-espionage, and sabotage.

### Specialized Forces

Erroneous and obsolete ideas prevail, not only in the mind of the public but in military circles, with respect to the activities and possibilities of modern secret forces. In the exercises conducted by the Western Allies, parachute agents with special radio apparatus were employed, enemy transmitters in the friendly army's rear areas were located through radio direction-finding, and sabotage and commando exercises were carried out. By such activities, we see the many developments that have taken place as a result of the specialization and expansion of intelligence activities. Such activities, frequently coupled with planned deception of the enemy, tend to weaken the morale of an enemy.

The use of secret forces in the Allied maneuvers in West Germany was limited, naturally, to major units on the front. Whether the more far-reaching operations

of a central headquarters of secret forces—coupled with the highest army command and governmental leadership—was also represented is not known.

In contrast with normal reconnaissance activities, the principal mission of reconnaissance by secret forces is to discover the enemy's plans prior to that period when they can be reliably detected by operational and tactical reconnaissance. The difficulties and limitations of reconnaissance by secret forces on the front is evident.

### Wartime Example

The basic principle that even the best information is worthless if it is received too late applies to the reconnaissance of secret forces. For example, let us note the belated reports which Allied and neutral intelligence sections received about preparations for the German invasion of Norway. As is known, a warning was sent to Norway on 3 April 1940 by the Dutch Military Attaché in Berlin. This report did not reach the Norwegian Government, as the Norwegian Embassy did not send it on to Oslo. As a result, the Norwegian Embassy member concerned was prosecuted after the War.

For this reason, radios and planes are used by secret forces. An agent is transported directly to the scene of activity, thus avoiding the long and hazardous passage through gaps in the front. The agent then radios the results of his work as quickly as possible to the authorities who sent him out.

### Strain of War

This procedure sounds very simple, and it can be reproduced faithfully in maneuvers. But it is difficult, in peacetime maneuvers, to duplicate the mental strain

to which agents and sabotage units are subjected when they are landed far behind an enemy front with only their own resources to protect them. The last War showed that only a very few agents set down in this way in the enemy's rear areas sent in reports of any use or value to the high commands. Cases in which allegedly ideological party members used this opportunity only for the purpose of getting to their homes quickly were numerous. Once back of the front, such agents often contacted the enemy intelligence service and then worked for their new masters by sending back misleading reports.

Matters were more favorable, in this respect, for the countries who opposed the Axis Powers. The far-flung underground movements in the countries occupied by Germany, as well as the Soviet partisan organization in the East and in the Balkans, afforded the Allied agents and commando formations sufficient operating bases, shelter, and support. Often these agents were supported by voluntary collaborators in the local population.

These and many other factors connected with the operations of agents must be included in a practice maneuver, or the maneuver will become unrealistic.

### Maneuver vs. Combat

Acts of sabotage against traffic movements and other important military objectives in the enemy's rear area were also included in the recent troop exercises. The danger of a superficial distortion of that very difficult but effective form of sabotage consisting of continuous attacks over a considerable period of time is very great. It is not enough that a man slip unnoticed up to the intended objective and somehow attach a red flag to it, thus signifying that the sabotage operation has been successfully accomplished. Rather, the unnoticed transportation of the explosive charge in boxes, as well as the proper application of the explosive to the objective, are to be

considered before the sabotage operation can be said to have been successful. It requires an astute, impartial umpire to make the right decision in matters pertaining to sabotage.

The Americans even went so far in their maneuvers as to represent the disintegration of the fighting forces through the simulated activity of fifth-columnists. There were "underground" newspapers; hand-bills dropped from planes urging the troops to desert; and defeatist slogans. The effects of such action, however, depending as they do on psychological and ideological influences, can hardly be seriously represented in peacetime maneuvers.

The term "fifth column" pertains to all those activities that cannot be connected with the regular activities of secret military forces. The varied interpretations applied to the "fifth column" have caused some confusion. The concept of the "fifth column" does not imply military intelligence, but, rather, a political and propagandistic activity with an ideological foundation.

In World War II, the national movements in Belgium, Holland, and Norway which sympathized with Hitler, as well as certain radical Slovakian and Ukrainian organizations, were called "fifth column." Today, we speak of a "fifth column" in Western and Southern Europe, and mean by it those organizations west of the "Iron Curtain" which are controlled by the Russians.

Military intelligence uses national or world-wide movements, taking agents, sabotage details, and similar groups of individuals from their ranks to carry out its missions. But military intelligence cannot direct a national or ideological movement politically. Only by the organized inclusion of political and military intelligence services in the supreme command are these boundaries merged and expanded in conformity with the laws of total warfare. Intelligence operations in the combat zones,

however, will always be conducted primarily from the military point of view.

### Commando Operations

Matters are different, however, in the case of "commando operations." These combat operations, which are carried out in co-ordination with the fighting forces or in the form of a raid, can be successfully conducted in a maneuver. They can be organized on tactical principles. And the requirements of the intelligence service, in the main, will dictate how the operations are to be organized.

The capture of a general at his command post by a commando detachment during the French maneuvers in the Rhineland may seem unrealistic. But a British commando detachment had the same mission against Rommel in his headquarters in Africa in 1942, and failed. In another instance, a German general was successfully carried off by Russian partisans, rolled up in a rug. In the future, these and similar carefully organized surprise activities may be expected.

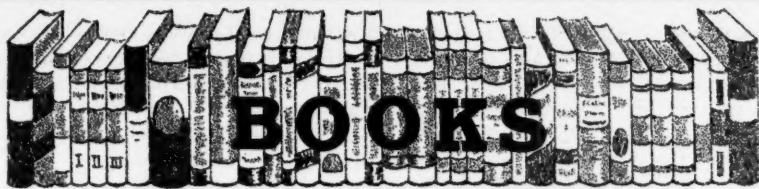
In World War II, special army, air force, and naval units carried out such hybrid military and political operations. Depending on the location of the task, they were either carried out in co-operation with the intelligence service or directly under the orders of the latter.

After the War, the combat operations of the British "Commandos," the American "OSS Detachments" and "Rangers," and the German "Brandenburg" Division, became known. The number of these combat

operations was considerable. The British sabotage attack on the Norwegian Rjukan Gorge electric power plant, which provided material for atomic research, was an example. Most interesting were the operations which were carried out in direct collaboration with the fighting forces, some of them making use of military ruses. Among these were the commando operation against Dieppe and the Channel Island of Sark in August 1942; the surprise capture of the highway and railway bridges at Gennep (Holland) on 10 May 1940 by the Germans; and the paratroop operations of the "Brandenburg" regiments to prevent the demolition of the Maikop and Grosny oil region in 1942.

The results obtained by these special formations are to be evaluated from the operational, tactical, and propagandist points of view, as well as from the standpoint of economy of military forces. It does not, therefore, seem unusual to use these forces in peacetime maneuvers, for a force into whose hands a tactical or operational advantage is placed must also make use of its advantage promptly. This, however, is just a matter of co-ordination between the intelligence service and the operating forces. More than ever before, the opposing sides will have to be on the alert so as not to fall victim to some carefully worked-out bit of cunning or attack in a wholly unexpected place.

The inclusion of secret forces operations in the Allied maneuvers in Western Germany in 1949, appears, in any case, to confirm some of the thoughts brought out in this article.



## FOR THE MILITARY READER

**CAPTAIN SAM GRANT.** By Lloyd Lewis.  
430 Pages. Little, Brown and Company,  
Boston. \$6.00.

*Captain Sam Grant* deals with the early and generally unknown portion of the life of Ulysses S. Grant. The author, a noted biographer and Civil War expert, has produced a scholarly and interesting account of the personal qualities of Grant and the events which shaped his later life.

As a farm boy, his first love was horses, and he became an expert horseman at an early age. Entering his father's tannery business, he took charge of the horses used for transportation. His ability and enthusiasm for this job was such that neighbors said that Sam Grant didn't break an unruly horse, but talked to it until it saw his point of view.

Sam's father, a successful businessman and politician, was ambitious for his son, and secured an appointment for him to West Point. During the processing of this appointment, the clerical error was made that changed his name from Hiram Ulysses Grant to Ulysses S. Grant. His friends, however, continued to call him "Sam."

At the Academy, he excelled in horsemanship, mathematics, and science, and won admiration by his unassuming manner and ability to think clearly, logically, and accurately.

After graduation, he was sent to Jefferson Barracks, Missouri, to join the 4th Infantry. Here he fell in love with his wife-to-be, Miss Julia Dent, daughter of Colonel Dent. Sam was accepted into the

family at once, although he differed politically with his father-in-law, particularly as regards the slavery question.

During the Mexican campaign, Lt. Grant showed himself cool and decisive in battle. After the first engagement, however, he was pulled from the front and put in charge of Quartermaster activities. During the second major battle, the dissatisfied young officer could stand it no longer and rejoined his regiment at the front. Here he took a point behind the enemy's lines, hastened the winning of the battle, and was complimented for his strategy, but not promoted.

Discouraged after the close of the War, he resigned from the Army. Ironically, his appointment to the rank of captain came the day of his resignation. Bad luck followed him into civilian life, where he seemed lost and unable to get a firm grip on himself. In desperation, he returned to the tannery business.

At the outbreak of the Civil War, he obtained an appointment as colonel in the Illinois militia, and in his calm, competent way eliminated confusion. This was the turning point. The reader knows that from this point on, Grant is to demonstrate his qualities as a leader.

Lewis has written in detail and with obvious admiration for his subject. Through his treatment of the man, the reader will understand Grant, and gain an insight into the qualities that made him great.

**THE PRICE OF SURVIVAL.** By Brigadier General Joseph B. Sweet, US Army-Ret. 230 Pages. The Military Service Publishing Company, Harrisburg, Pa. \$2.85.

This book is a timely, comprehensive study of national security and future alternatives in the event of another war. It gives a detailed account of the potential capabilities and possible results of a war involving the US and the USSR.

*The Price of Survival* is not intended as a play on emotions, but rather as an analysis of odds and probabilities involving very high stakes; survival and human freedom. It was written on the assumption that the American people are entitled to know the degree of danger they face.

As a result of analyzing the factors involved in the twin problems of seeking to avert a war, or failing that, to survive a war, the author outlines a course of action to reduce the risks involved.

It is his opinion that the security of the US rests on five capabilities:

1. The ability to instantly defend the US against direct attack to avert unacceptable loss of life and war potential.
2. The ability to immediately strike back and weaken Russia's war potential.
3. The readiness to maintain control of sea and air routes to the strategic areas of the world.
4. The readiness to ensure that Allied forces can prevent the Soviet Army from overrunning Western Europe.
5. The ability to mobilize the vast war potential of the United States to meet the requirements of all our forces.

All facts in the book are clearly stated, and the conclusions are logical.

In the words of the author: "The issue before us is no less than life or death; we cannot compromise or bargain with it. Whatever the charge against us may be in dollars or in effort, it must be paid. It is the cost of living in an explosive world—it is the price of survival."

**SOVIET RUSSIA AND THE FAR EAST.** By David J. Dallin. 398 Pages. Yale University Press, New Haven, Conn. \$5.00.

Highlights of the main issue in the tremendous cold war being waged throughout the world.

**RUSSIA AND THE WEST IN IRAN, 1918-1948.** By George Lenczowski. 383 Pages. Cornell University Press, Ithaca, New York. \$4.50.

A comprehensive account of big power rivalry in Iran during the past 30 years.

**DEATH OF A SCIENCE IN RUSSIA.** Edited by Conway Zirkle. 319 Pages. University of Pennsylvania Press, Philadelphia. \$3.75.

A documentary study of the events leading up to the separation between Russian scientists and the West, and the diverting of science to serve the state.

**THE FUTURE OF DEMOCRATIC CAPITALISM.** By Thurman W. Arnold, Morris L. Ernst, Adolf A. Berle, Jr., Lloyd K. Garrison, and Sir Alfred Zimmern. 112 Pages. University of Pennsylvania Press, Philadelphia. \$2.00.

A book, confident of the future of American democracy, offering new possibilities for meeting internal strains and foreign pressures.

**KOREA TODAY.** By George M. McCune. With the collaboration of Arthur L. Grey, Jr. An Institute of Pacific Relations Book. 372 Pages. Harvard University Press, Cambridge, Mass. \$5.00.

A comprehensive study to provide the necessary background for understanding the Korean conflict.

**HUMAN BONDAGE IN SOUTHEAST ASIA.** By Bruno Lasker. Published under the auspices of the Institute of Pacific Relations. 406 Pages. University of North Carolina Press, Chapel Hill. \$6.00.